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Product Spotlight

Superminis Riding the Crest Of Swelling Popularity Wave

By Tim Scannell
CW Staff

Excitement, drama, high stakes, trade secrets and enough rumors to fill the juiciest gossip magazines — these are the elements that today mark the supermini segment of the computer industry. Currently riding the crest of a popularity wave that gets bigger as each new 32-bit machine enters the water, superminis are in many cases offering users the power of a mainframe for not much more than the price of a minicomputer, as the chart on Page 10 shows.

Although 32-bit minicomputers have been around for about eight years, starting with the debut of Perkin-Elmer Corp.'a Model 7/32, the primary target for these machines was not the bread-and-butter group of the data processing community — the commercial applications users. Instead, because of their high-performance, number-crunching capabili-

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NEWSPAPER

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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Bell Planning To Restructure BOCs in Groups

By Phil Hirsch
CW Washington Bureau

NEW YORK — AT&T has announced plans to restructure its 22 operating companies into seven regional groups. Each group will apparently be run by a holding company, and a central directorate will be responsible for performing certain functions.

The proposed restructuring of the 22 Bell operating companies (BOC) is the first substantive step AT&T has taken toward implementing the agreement the company signed with the Justice Department in January. That agreement — officially a proposed consent decree — is intended to end the government's seven-year-old antitrust suit against the phone company.

The agreement has yet to be approved by presiding Judge Harold Greene. The new Bell operating company organization chart also must be accepted by Greene, as well as by the Justice Department.

(Continued on Page 8)

Reagan Delays Security Plan

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The White House has acceded to a congressional request for more time to consider President Reagan'a proposed changes to government information classification regulations.

Rep. Glenn English (D-Okla.), chairman of the House of Representatives Government Information and Individual Rights Subcommittee, announced the administration'a decision last Tuesday and said that his subcommittee will hold hearings on the proposed Executive Order on National Security Information next week.

In a recent letter to National Security Adviser William Clark, English

(Continued on Page 2)

Poll of Managers Finds
Operators' Raises to Beat Inflation

DATA ENTRY

JOB TITLE	RANGE	AVERAGE	MEDIAN	PROJECTED 1982 AVERAGE INCREASE %
Keypunch Operator	650-1,268	896	917	9.8
Key-to-Disk Operator	717-1,225	908	909	9.1
Senior Operator	800-1,774	1,074	1,072	9.3
Shift Supervisor	927-1,806	1,286	1,242	9.3
Data Entry Manager	981-2,256	1,492	1,404	9.4

DATA CONTROL

JOB TITLE	RANGE	AVERAGE	MEDIAN	PROJECTED 1982 AVERAGE INCREASE %
Control Clerk	703-1,443	940	914	9.9
Senior Control Clerk	833-1,655	1,143	1,129	9.2
Tape Librarian	708-1,586	1,125	1,084	9.6
Shift Supervisor	953-1,880	1,398	1,334	9.8
Data Control Manager	1,170-3,200	1,823	1,921	9.9

COMPUTER OPERATIONS

JOB TITLE	RANGE	AVERAGE	MEDIAN	PROJECTED 1982 AVERAGE INCREASE %
Operator Trainee	638-1,535	954	971	9.5
Operator	791-1,650	1,134	1,100	9.7
Senior Operator	917-2,202	1,375	1,346	11.7
Shift Supervisor	1,125-2,400	1,679	1,625	10.1
Computer Operations Manager	1,127-3,010	2,049	2,083	9.8

DATA PROCESSING OPERATIONS

JOB TITLE	RANGE	AVERAGE	MEDIAN	PROJECTED 1982 AVERAGE INCREASE %
Operations Analyst	1,250-2,160	1,749	1,833	11.1
Scheduler	900-2,773	1,602	1,500	10.6
Data Processing Operations Manager	1,584-4,165	2,576	2,515	10.6

Source: Afcom

By Bob Johnson
CW New York Bureau

ANAHEIM, Calif. — Salary increases for computer operators may beat 1982's rate of inflation as they range between 9.5% and 11.7%, depending upon the operator'a experience. But the recruitment of experienced operators will be "next to impossible" for at least 24% of the respondents to the Association for Computer Operations Managers' annual salary and recruitment survey.

Afcom polled operations managers across the country with questions on data entry, data control and computer operations personnel. The monthly salaries for these positions as well as recruitment criteria were broken down into categories that reflected national, geographical and size-of-installation consensus. Salaries were further broken down by average amount paid for the position, high and low ranges and median salaries (see illustration at left).

The survey found operator trainees earning an average national salary of $954/mo, with that figure expected to rise 9.5% over the next year. Figures for operators and senior operators averaged $1,134 and $1,375, respectively, with 9.7% and 11.7% average increases expected.

Shift supervisors showed earnings of $1,679/mo with a 10.1% rise projected this year. Computer operations

(Continued on Page 5)

Fewer Computer Failures Reported
Post-Strike ATC System Safe: Investigation

By Marguerite Zientara
CW Staff

ARLINGTON, Va. — The air traffic control system overall is as safe today as it was before the Aug. 3 air traffic controllers' strike, and fewer failures of computer-based equipment have been reported since then, according to a study by the Flight Safety Foundation here.

Last August, Federal Aviation Administration Chief J. Lynn Helms asked the foundation — an independent, nonprofit organization — to evaluate the post-strike ATC system. A 16-member task force collectively visited over 70 ATC facilities, spending more than 500 hours observing controller operations and interviewing about 500 controllers and supervisors.

While the foundation's four-month appraisal found it "probable that safety margins have been increased in the IFR [Instrument Flight Rules] system," it also speculated that "there may be a decrease in safety margins to all users because of reduced services and the resultant increase in VFR [Visual Flight Rules] operations."

The foundation also found that "equipment malfunctions, computer outages and interruption [sic] have declined significantly. Whether or not past incidents were attributable to system overload, equipment misuse or nuisance complaints prior to the strike, such instances are now less frequent.

"Airways facility personnel continue to attend to problems in a timely manner," the report added.

Citing the reported existence of

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First Commercial User of Rolm CBX Says System Fine, But Bugs in Vendor Support

By Bruce Hoard
CW Staff

SALT LAKE CITY, Utah — The hardware and software are fine, but there are bugs in the vendor support, according to the first commercial user of Rolm Corp.'s Computerized Business Telephone System (CBX) add-on data capability.

Evans & Sutherland Computer Corp. here has had its CBX for about two years. The firm implemented the data communications feature during the last week of December and first week of January, Brad Morgan, supervisor of Computer Network Services, said in an interview last week.

Morgan reported no appreciable problems in implementing the hardware portion of the package, which allows the CBX to switch simultaneously both voice and data communications internally without modems over the same telephone wires. The data feature provides digital data communications between computers, asynchronous terminals and other transmission facilities at speeds up to 19.2K bit/sec.

Evans & Sutherland installed 224 CRT-terminal-like devices known as Data Terminal Interfaces to display data. Additional time division multiplexing control cards expanded the capacity of the CBX by providing data submultiplexing.

Minor Problems

The user did experience what Morgan termed "minor" initial software problems, but he attributed them to his company's haste in implementing the data capability. Evans & Sutherland had its production hardware before the production software was available, so it went ahead and ran the field test software, he said.

"We were actually considered a very late field test site as opposed to a first production release," he noted.

The situation worked out in the firm's favor when some of the suggestions it made for improving the software were implemented in the final production package it is currently using.

As for the total costs of the add-on capability, Morgan said that the hardware portion was $147,000 and the software was $1,500.

But what about vendor support?

"I think the biggest problem we've had with the installation has been communication between the three parties involved — the local Rolm company, Rolm Santa Clara and Evans & Sutherland," Morgan declared. The lack of what he termed "personal communications" made the implementation and postimplementation periods difficult, he explained, noting there have been no well-defined channels for asking questions and getting answers.

He attributed the communications breakdown to the nature of Rolm's relations with its local dealers, or "Rocos." According to him, the Rocos are independently owned Rolm operating companies with their own sales, maintenance and installation staffs. Rolm corporate headquarters in Santa Clara, Calif., treats the operating companies as OEMs, he said.

Evans & Sutherland started chafing when it felt it was not being actively included in the implementation and operation of the data add-on. "The general philosophy of the Rocos has been that the intelligence level of the customer is such that he wants to pick up the receiver on his phone and dial somewhere, and that's all he ever wants to know or needs to know about the telephone system," Morgan contended.

While an attitude like that is not unreasonable when dealing with telephones, it must be adjusted when data communications are included, he claimed.

Are the Rocos qualified to work with data communications? "They're getting there," he said, adding a warning for other companies who install the CBX data capability: "I think each Roco is going to have a minor amount of difficulty with its first company, depending on exactly what the customer needs are."

Reagan Delays Security Plan

(Continued from Page 1)

and seven other House chairmen had requested additional time to scrutinize the draft executive order [CW, Feb. 22]. The original comment period expired last week and the chairmen told Clark they needed more time to study the proposed classification changes.

In announcing the upcoming hearings, English reported that Clark had advised him by telephone of the extended review period, but had set no new deadline.

Saying he was pleased with the administration's decision, English noted that "there has been little public circulation of the draft order and, consequently, little public debate." The secrecy rules are of interest not only to the government, but also to the scientific, industrial, research and development and academic communities, according to English, who said also that "the press has an obvious interest in classification."

Commenting directly on the Reagan draft order, the subcommittee chairman said that the order "appears to increase significantly the amount of information that would be subject to classification. Not only would it be easier to classify ordinary information not readily [classifiable] now," he observed, "but new categories of scientific and technical information might also be subject to classification for the first time."

The subcommittee's hearings will be held March 10 and 11.

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Operation Exodus Brings in Convictions

Feds Cracking Down on High-Tech Smugglers

By Jim Bartimo
CW Staff

WASHINGTON, D.C. — A federal crackdown on the illegal export of high-technology equipment to foreign countries has resulted in a 10-year jail sentence for the president of Spawr Optical Research, Inc.; a 30-count indictment against the officers of Modern Equipment Services and C-O Manufacturing Co., Inc.; and an investigation of Basic Four Corp., a division of Management Assistance, Inc. (MAI).

Dubbed Operation Exodus, the crackdown is a U.S. Customs Office project. Experience has shown that unlicensed equipment is often bound for the U.S.S.R., according to Pat O'Brian, customs director of the General Investigations Division.

"The Soviets are getting a lot of our technology and, as a result, a lot of our research and development money. If we're going to spend large sums of money on R&D we may as well spend some money to make sure it stays here," O'Brian said last week.

According to a recently released report by the U.S. Customs Office, Walter J. Spawr, president, and Frances A. Spawr, secretary/treasurer of Spawr Optical, were found guilty last month in U.S. District Court for the Central District of California on charges of conspiracy, making false statements to a government agency and violating export control laws in connection with the export of laser mirrors to the Soviet Union via West Germany and Switzerland in 1976 and 1977.

The court fined the Corona, Calif., corporation $100,000 and sentenced the firm's secretary/treasurer to five-years' imprisonment. The sentence was suspended and Frances Spawr has been put on probation for five years. Walter Spawr, sentenced to 10 years in prison and five years' probation, will spend six months in prison and then be on probation.

The convictions are under appeal, but on Feb. 24 the Department of Commerce denied the firm and its principals all export privileges pending final disposition of administrative and judicial proceedings.

In another case that was part of Operation Exodus, a 30-count indictment was handed down on Feb. 18 by the grand jury in the District of Massachusetts naming Brian A. Moller Butcher and Paul C. Carlson for violations of the Export Administration Act. The indictment alleges that Butcher, an English citizen, and Carlson shipped U.S.-made technological equipment through their companies (both at the same address in Brockton, Mass.) to Poland, Romania and Bulgaria in violation of U.S. Commerce Department regulations.

The equipment, which includes semiconductor manufacturing equipment, computer terminals and peripherals, required export licenses to be shipped from the U.S.

According to the Customs report, $500,000 worth of equipment — including a Fairchild Sentry VII integrated-circuit tester valued at $300,000 — was shipped illegally. The equipment was seized at Boston's Logan International Airport and New York's Kennedy International Airport prior to exportation.

Carlson has been charged with making false statements to the U.S. government on the Shipper's Export Declaration, a document that is filed with customs at the time of export.

Butcher was previously arrested on a complaint on Jan. 14 and is presently out on $10,000 bail. A trial is scheduled for May.

Neither Butcher nor Carlson could be reached for comment.

In New Orleans, customs officials seized a computer memory board bound for a computer distributor in Honduras that was being shipped by Basic Four.

The board was listed as computer parts valued at $250, but Operation Exodus investigators claim that its estimated value is $7,000, according to Paul M. Hammerstern, deputy regional director of investigations for the customs office. The investigators contacted the U.S. Commerce Department and were told that the firm did not have a license to export the equipment.

But Steve Egol, vice-president of international marketing for MAI, said that price discrepancy is a misunderstanding. "We shipped a replacement board to our Honduras distributor for a computer we sold to Citibank there," Egol said. "As an add-on enhancement, the board would be worth $7,000, but as a replacement part we gave it a value of $250."

Egol maintained that "we have a valid export license to Honduras. It was issued in May 1980 and will expire in May of this year, but it's in the process of being renewed."

U.S. Customs 'Sandbags' Illegal Exports

WASHINGTON, D.C. — When customs officials began checking an outgoing shipment to Europe marked "washing machines" last year, they found high-technology equipment from I.I. Industries of Sunnyvale, Calif.

But customs did not blow the whistle on I.I. Industries. Instead, officials filled the containers with bags of sand and let the shipment go through as if no one had noticed the falsified marking. The officials followed a paper trail through countries in Europe that eventually lead to the Soviet Union.

I.I. Industries eventually was brought to trial on charges that it violated the export regulations and is currently on the Department of Commerce's list of companies not allowed exporting privileges.

Incidences such as the I.I. Industries case and the Werner J. Bruchhausen case [CW, Aug. 31] led to the creation of Operation Exodus last October, which has since resulted in about 65 seizures of illegal shipments of high-technology equipment, according to Pat O'Brian, director of the General Investigations Division for U.S. Customs.

In the Bruchhausen case, "Bruchhausen had set up three or four firms in West Germany," coordinator of Operation Exodus Gerald Dominick recalled. He exported equipment to those firms, which then shipped the gear to the Soviet Union. Although indictments were made last summer against his cohorts, Bruchhausen remains "a fugitive from the law," Dominick said.

The federal government's concern in cases like this is that high-technology equipment, especially computer components, are finding their way to the Soviet Union via European and Eastern Bloc countries, O'Brian said. This equipment could eventually be used for military purposes, he added.

With teams around the country, Operation Exodus is conducting criminal investigations, relying on leads from "loyal Americans" and random checking of exported goods, O'Brian said. "We were originally conceived as an inspection project, but now we concentrate on licensing," O'Brian said. "We don't seize unless there's a license problem."

Once a seizure is made an investigation is held, Dominick said. If the investigation merits it, the case is then turned over to the Justice Department for prosecution.

From New Jersey Warehouse

Exxon Chips Worth $2 Million Stolen

MORRIS COUNTY, N.J. — Nearly two million integrated circuit chips valued at $1.5 million to $2 million were stolen from the Vydec Division of Exxon Office Systems Co. here last week.

The chips were stolen from a warehouse rented by Vydec for stockpiling purposes, according to a spokesman for Exxon Office Systems, Fred Mason. He said that the logic and memory chips were excess goods originally purchased for use in Exxon Models 2000 and 4200 word-processing equipment, which was withdrawn from the marketplace last year.

"At the time of the crime," Mason said, "we were soliciting bids to dispose of the chips."

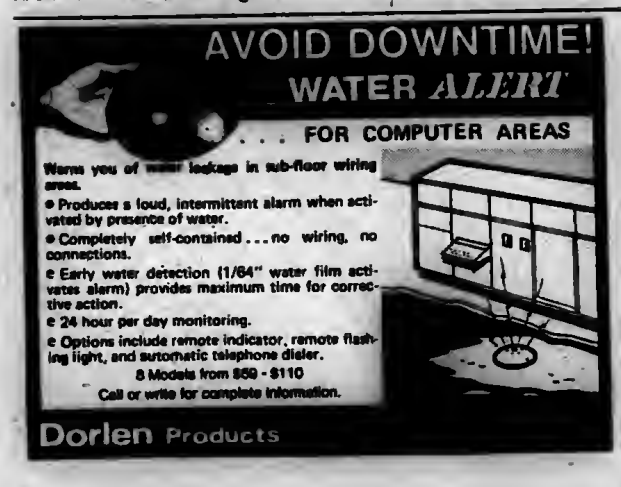
The theft was reportedly the largest crime of its kind in the New York metropolitan area. Authorities said the chips were mingled with other computer components and electronic devices also stored in the warehouse. The thieves chose only the chips and ignored the other components, whose worth was estimated at $20 million.

According to John DeCicco, acting prosecutor of Morris County, the chips were distinguishable only by invoice sheets on their boxes.

Mason called the premises rented by Vydec, actually a vacant store used as a warehouse, a "secure facility" surrounded by fencing and guarded by electronic security devices. The burglars simply bypassed the security devices, DeCicco said. There were no security guards on the premises.

The investigation into the crime is being handled by the Morris County white-collar crime unit, DeCicco said. A number of witnesses are being questioned, he added, but said he could not reveal any other details.

Exxon Office Systems declined to comment about the possibility of taking legal action against the owners of the warehouse. Under New Jersey state law, the crime against Vydec constitutes a burglary and theft, which could be punishable by up to 10 years in prison.



IBMer Sees Disks Cheap, Upkeep Costly in '90

By Jeffry Beeler
CW West Coast Bureau

SAN FRANCISCO — By 1990, disk systems will cost 10 times less to use but four times more to maintain than they did just two years ago.

A megabyte of disk-filed data that cost $1/mo in 1980 will cost only 10 cents — perhaps even as little as 5 cents — eight years from now, according to a senior IBM marketing support representative.

But maintenance is an entirely different story. By the end of this decade, the cost of having a disk system fixed by a field-service engineer will zoom to $500/hour, compared with $126/hour in 1980.

That prediction came from IBM's Luke Short, who spoke recently during the annual meeting of Future, Management Science America, Inc.'s newly renamed users group.

In the past, Short told users of the Atlanta-based software company, disk storage costs have declined roughly tenfold every decade. Between 1970 and 1980, for example, the cost of storing 1M byte of disk-resident data shrank from about $10/mo to $1/mo and the reductions are likely to continue at a comparable rate during the 1980s.

Just the opposite trend, however, has prevailed in the area of disk systems maintenance. During the decade ending in 1980, the average hourly rate that customer engineers charged to service a disk unit in the field rose from $28 to $126, Short said.

If costs continue to increase at the same rate during the next eight years — and all signs suggest they will — the expense of an on-site service call will soon become prohibitive. The result is that by 1990 most maintenance of disk systems and their controllers will be performed not by vendor-employed engineers, but by users themselves, Short said.

Assisting users in their do-it-yourself service efforts will be a growing array of intelligent portable troubleshooting tools that will allow hardware bugs to be diagnosed automatically. A number of such tools, in fact, are already in widespread use today.

Speaking on "Trends in Storage Technology," Short estimated the average computing shop's increase in disk-space requirements at 45% to 63% yearly. At many companies, he added, the annual growth in storage demand exceeds 100%.

If the current rate of increase is sustained, users can expect their disk systems spending to jump fiftyfold to hundredfold by 1990. But clearly, such a monumental rise in expenditures lies far beyond the typical customer's ability to absorb.

In the future, users will have to look increasingly to other forms of external memory to meet their total data storage needs. One such alternative to conventional disk units will be mass storage systems, which have gained fairly widespread acceptance.

Other potential disk systems alternatives include more exotic data storage technologies like magnetic bubbles, optical disks and Josephson junctions. But none of these technological breakthroughs are likely to displace disk systems anytime soon, Short said.

Pay Hikes May Beat Inflation

(Continued from Page 1)

managers made $2,049/mo on the average; their salaries are expected to go up 9.8%.

In DP operations, Afcom reported that operations analysts earned an average $1,749/mo nationally; that wage is expected to rise 11.1%. Schedulers earned $1,602 with salaries projected to rise 10.6%.

DP operations managers made $2,576/mo, and 1982 will see that figure rise 10.6%, according to Afcom.

Overall, Afcom stated that operations salaries are going up at an average of more than 9.5%. Computer room personnel will experience the highest rate of all operations area increases.

Recruiting Problems

However, the most severe recruiting problems were found in the computer room, according to Afcom, with 42% of the respondents attempting to recruit entry-level computer operations reporting difficulty. The figures for experienced computer operators were even worse: 71% of those looking for experienced operators reported trouble finding them, and 24% found it "next to impossible."

Of the respondents attempting to recruit operations analysts and computer operations managers, all experienced difficulty in every case, Afcom said.

Afcom found that because many positions in operations are traditionally filled internally, entry-level job recruitment will be the main concern for operations managers in 1982.

"In the data entry area, 48% of all respondents actively recruited for key-entry personnel. Of those, 44% found it difficult to acquire trained operators," the survey said.

Data control recruitment fared better, according to the survey. Of all respondents, 29% said they had positive results and only 14% recorded negative findings.

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MIS Options Varied for Business School Grads

By Marcia Blumenthal
CW Staff

Graduate schools of business are increasingly attracting students eager to specialize in management information systems (MIS).

Presently, however, relatively few business schools have the required number of faculty members to offer full-blown MIS graduate programs, several professors at business schools affiliated with MIS research centers recently reported.

But those students who do graduate from management programs with MIS concentrations have varied career paths depending on how much prior DP experience they have had.

A graduate with an MBA with an MIS specialty who has little DP experience usually has to spend at least two years as a systems analyst or designer, explained H. Albert Napier, associate professor of MIS at the University of Houston and director of the Information Systems Research Center, which is affiliated with the university. "The MIS manager has to have snow-proof technical skills, which are picked up at the entry-level," he continued.

These graduates can expect to earn between $25,000 and $30,000 on their first job out of school, most professors agreed.

Experience Helps

Those graduating from MBA programs with a concentration in MIS who have considerable MIS experience can, in some cases, obtain salaries of $50,000 or more, according to Dr. Ephraim R. McLean, associate professor of information systems at the University of California at Los Angeles. McLean is also director of UCLA's Computers and Information Systems Research Center.

While some graduates pursue careers at end-users' sites, others opt for opportunities with vendors in the computer industry or with consulting arms of Big Eight accounting firms, he said.

The mix of students with non-DP backgrounds and DP backgrounds varies considerably at graduate business programs affiliated with MIS research centers. However, in some cases, non-DPers comprise about 40% of those students concentrating in MIS.

Although the curriculum varies depending on experience, UCLA's program could serve as a representative example of an MIS curriculum at a graduate business school.

Students in this program take "Introduction to Computers," which includes some hands-on experience, one or more courses in interactive or batch systems using either PL/I or APL, "Introduction to Information Systems," "Analysis and Design of Systems," "Specification and Configuration" and "Management of the MIS Function."

Moreover, students may choose two courses in subjects such as data base management systems, computer simulation and modeling, networking and telecommunications and office automation, among others.

Report: Post-Strike ATC System as Safe

(Continued from Page 1)

"troublemakers" in the prestrike controller work force — said to comprise 10% to 30% of the staff, depending on the facility — the task force reported "many examples of prestrike activities that were disruptive to the FAA's daily operations." Among the examples reported in personal interviews with post-strike controllers: "There was constant complaining about the inadequacies of the radio, radar and computer equipment. Supervisory and airway facility maintenance personnel were inundated with complaints on every shift, only to find that many were without basis."

In addition, the task force found that "Unsatisfactory Condition Reports were submitted and union grievances filed in such great volume as to burden supervisory and management personnel in paperwork, meetings and conferences to the detriment of operational supervision."

Furthermore, the task force reported instances of alleged harassment by members of the Professional Air Traffic Controllers Organization (Patco). "Controllers who had no intent to strike were allegedly 'set up,'" the report said. "Aircraft were maneuvered so that they would be in potential conflict when they entered the 'uncooperative' controller's airspace. We also received reports that the work environment was one of bickering, abusiveness and continual harassment of controllers and supervisors."

In the area of controller stress, the report cited the 1978 *Air Traffic Controller Health Change Study* by Dr. Robert Rose, Dr. David Jenkins and Dr. Michael Hurst, all of the Boston University School of Medicine [CW, June 4, 1979]: "We feel that some union activities may inadvertently have contributed to the alienation and divisiveness controllers experience in the ongoing adversarial relations with the [FAA] agency."

Noting that it did not find current evidence of controller stress, the task force attributed the situation to the absence of Patco "troublemakers" as well as the reportedly improved equipment performance since the strike. "This results in less equipment-induced interruptions and irritation to the controller.

"The future status of the striking controllers was the most stressful factor observed by the task force," according to the report. "The nearly unanimous sentiment was that none of the strikers should be returned."

Current controllers "want the President, the secretary of transportation and the FAA administrator to hold to the position taken at the beginning of the strike."

Patco Response: 'A Hollow Charge'

WASHINGTON, D.C. — The Flight Safety Foundation's recent findings concerning the alleged activities of Professional Air Traffic Controllers Organization (Patco) members before its Aug. 3 strike constitute "a hollow charge," according to the Patco president's special assistant.

Responding to the finding that Patco members were largely "troublemakers," William T. Taylor, special assistant to Patco President Gary W. Eads, said, "We think that statement is such a serious one . . . that we are in the process of preparing, researching and documenting an answer to the entire report and specifically that particular charge.

"We felt that without any presentation of facts, it is a hollow charge insofar as they didn't have any charges as to times, places, facilities or actual incidents recorded by supervisors and managers," Taylor said.

"If they actually had the charges presented to them by people in facilities across the country, it would have been easy enough to record who was making those charges and when those incidents occurred that said controllers were 'setting up' other controllers.

"That's criminal activity and it's a very serious, serious charge to make against a professional, whether it be a pilot or a controller and . . . we haven't seen any substantiation of it," he said.

Patco's formal response is expected to be ready this week, Taylor said.

Patco Issues Of Long Hours, Low Pay Remain

ARLINGTON, Va. — Even though the Flight Safety Foundation concluded that the air traffic control system is safe and that controller/controller and controller/pilot cooperation is at a peak — views reportedly shared by controllers and pilots alike — two issues remain that contributed to the Aug. 3 walkout by members of the Professional Air Traffic Controllers Organization (Patco): long hours and low pay for some.

While Patco lobbied for a shorter work week and higher pay, currently "duty hours have been substantially increased," the foundation reported. "The work week has increased at many facilities to 48 hours" and yet, the study continued, "evidence of fatigue was not found.

"Many controllers indicated that they could continue to perform their duties under current circumstances indefinitely," the foundation said in its recent study, adding, "Some others indicated they could only continue for about six months to a year."

Commenting on "circumstances conducive to lowering morale," the report found "the foremost concern was the pay cap limitation being encountered by high-grade personnel," noting, "Some facility managers have worked many hours without extra compensation."

Afips Journal Covers Development of DP

ARLINGTON, Va. — *The Annals of the History of Computing* is now available from the American Federation of Information Processors (Afips) Press.

The journal is published on a quarterly basis and contains approximately 100 pages of articles covering the development of all aspects of computing. Contributions from participants in early computing activities are included as are accounts from historians.

Subscription to the journal costs $18/year for Afips members, $24/year for nonmembers and $50/year for institutions. It can be obtained from Afips Press, P.O. Box 9657, Suite 800, 1815 N. Lynn St., Arlington, Va. 22209.

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Result: 'Living Laboratories'

Corporate MIS, Business Schools Teaming Up

By Marcia Blumenthal
CW Staff

Holy alliances between management information systems (MIS) departments of corporations and research centers at graduate business schools are cropping up around the country.

The result? MIS departments are gaining a forum to explore leading-edge issues in the DP arena and graduate students specializing in MIS have access to living laboratories for research work.

Although business schools are interested in training students in information sciences, to date only about five schools have had the resources to establish centers dedicated to MIS research. Most business schools do not have a large enough MIS faculty to staff such a center. Only about 15 Ph.D.s in MIS are graduated annually, estimated James C. Wetherbe, an associate professor at the University of Minnesota's school of management and director of the Management Information Systems Research Center (MISRC).

Formed in 1968, MISRC, located in Minneapolis, is the oldest of the research centers. Falling under the aegis of the university's graduate school of management, MISRC is fairly typical of its counterparts at other universities.

Corporate Funding

MISRC is funded by about 20 corporate sponsors who pay $5,000 annually for participating in the program. Each year the faculty of MISRC meet with the chief MIS executives of the sponsoring firms to discuss the most pressing problems in the DP environment of the corporation. Based on the interests of the students in the MIS program, a variety of research topics are picked and corporate sponsors make their MIS departments available to students for their research projects.

In addition to research projects, most centers also hold seminars on "hot-button" MIS topics throughout the year for their corporate sponsors.

The research center is an infrastructure that allows the faculty to find out what the MIS needs of the business community are, Wetherbe said.

At Minnesota, some of the major topics under study are strategic planning, in particular aligning the objectives of the MIS department with those of the organization, managing user-developed systems, improving the productivity of the knowledge worker and developing radical new methods for system design such as heuristic development and prototyping.

MISRC is also in the process of finishing a study on stress management in DP departments that involved more than 1,000 interviews and is conducting a year-long study in telecommuting. Some 50 workers, both clerical staff and programmers, from three companies in the Twin Cities area are participating in the telecommuting experiment, Wetherbe reported.

Although the majority of projects selected for study by MIS research centers are geared to providing solutions to business, corporate sponsors are sophisticated enough to realize that a considerable amount of the research will be purely academic.

"MIS is not a discipline where we figure out what the world should do. The only way we know what is going on in the business community is in our laboratory, but we also have to decide how valid our results are," Wetherbe explained.

Sloan School

Offering another perspective was H. Lynne Marcus, an assistant professor at MIT's Sloan School of Management and a research associate at the school's Center For Information Systems Research (CISR).

MIS is a rather unusual academic discipline because it involves many areas of concern, she offered. These include accounting, behavioral sciences, computer science, industrial engineering and management. Because of its interdisciplinary nature, MIS lacks a certain amount of academic respectability, she said.

Like MISRC, CISR operates in tandem with a management school and has about 20 sponsors who generally pay between $20,000 and $25,000 annually. Founded in 1975, CISR is considered the best endowed MIS research center. CISR holds four conferences annually for its members, covering topical MIS issues such as human-resource management and end-user computing.

Besides MISRC and CISR, the Computers and Information Systems Research Program is associated with the University of California at Los Angeles. This program has 25 sponsoring firms that pay between $2,500 and $10,000 for membership, reported Dr. Ephraim R. McLean, associate professor of information systems and director of the research program. One of the main focuses of McLean's program is decision support systems.

The Information Systems Research Center is affiliated with the University of Houston.

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FCC Gets More Requests for Dems

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The Federal Communications Commission last week received requests from ITT World Communications, Inc.; Southern Pacific Communications Co.; and a newly formed company, Satellite Systems Corp. (SSC), to offer digital electronic message service (Dems) in major cities throughout the nation. The grand total of Dems applicants now stands at 18.

Fifteen companies, including the three which filed this week, requested authorization to establish "extended" Dems systems that would cover 30 or more cities. The other three filed for "limited" networks covering fewer than 30 cities.

However, the FCC has allocated only seven channel pairs for extended Dems service.

SSC, one of the three prospective Dems carriers filing last week, is headed by John W. Huang, an ex-IBMer who helped design the company's satellite-based internal communications network. SSC will be a resale carrier. "We plan to offer voice/data services utilizing microwave-based local-distribution networks interconnected by satellite circuits leased from others," Huang said.

Microwave local-distribution facilities, often referred to as digital termination systems, are one component of Dems. The other consists of wideband terrestrial and/or satellite intercity (interexchange) circuits. The result is an all-digital, end-to-end message path capable of transmitting up to 1.544M bit/sec.

High-speed facsimile, computer-to-computer file transfers, video teleconferencing, high-speed word processing and messaging are among the applications Dems is designed to handle.

The new offering is expected to be far less costly and far more available than AT&T's Dataphone Digital Service, which is the major source of wideband, end-to-end digital communications channels today. It will probably be some time before the first Dems network is on the air, however, because a number of regulatory issues remain to be cleared up at the commission.

For example, at least two of the seven extended channels are being sought by more than one applicant, so extended hearings are likely in at least some cases. Two applications — those filed by Telenet, Inc. and Insurance Systems of America, Inc. — are being contested because the companies are subsidiaries of telephone carriers, which allegedly puts them in a position to compete unfairly.

Meanwhile, efforts to reduce the number of contested channels are moving forward. One indication is that last week, GTE Telenet requested permission to switch from a contested to an uncontested channel in each of 11 cities. The company has applied for a 41-city Dems network. If the changes are approved, which appears likely, GTE will not have to contend with opposing applications in 18 cities.

But among the remaining 23 cities in the proposed GTE Telenet Dems network are New York and other major markets.

FCC to Adopt Teletext Standard By September, Staff Member Says

WASHINGTON, D.C. — The Federal Communications Commission (FCC) hopes to adopt by September a teletext standard that would allow U.S. television stations to offer commercial teletext services, an FCC staff member said last week.

The FCC has proposed a teletext standard that defines the area within the TV signal — lines 14-18, 20 and 21 of the vertical blanking interval — to be used by teletext services, but lets the system operator decide what teletext technology to employ.

Several hundred comments on this proposal were submitted to the commission last month. For data communications users and suppliers, the key statements came from the UK Teletext Industry Group and from Telidon Videotex Systems, Inc. (TVSI), both of which are competing vigorously for U.S. customers.

The British are promoting Prestel, a system that features a relatively inexpensive teletext decoder, but at present has limited graphics display capabilities. The FCC's decision to let the provider of teletext service to choose the system was applauded by the British group. They said that if the FCC took on this responsibility, it would delay adoption of a standard, preventing the introduction of commercial services within the near future, giving AT&T an advantage.

The proposed settlement of the U.S. vs. AT&T antitrust suit would allow AT&T to implement a full range of interactive services.

TVSI, the U.S. marketer for Telidon, Canada's teletext/videotex system, said that unless the FCC endorses a specific teletext technology, uncertainty about standards will make manufacturers and service suppliers hesitate to invest. This in turn will prevent the price of the decoder from coming down.

The standard that should be adopted, TVSI added, is the one unveiled in Toronto last year that embodies work done by the Canadians, the French, the Columbia Broadcasting System and AT&T. Known as the North American Standard, it includes the Presentation Level Protocol, a text-and-graphics coding scheme that AT&T has officially adopted for its future videotex services, and an "asynchronous, variable" transmission scheme compatible with the Canadian and French, but not the British teletext systems.

MCI Again Inks Pact On 11-Digit Access

WASHINGTON, D.C. — Last September, MCI Telecommunications Corp. announced an agreement with Northwest Iowa Telephone Co. which allows the latter's customers to access MCI or AT&T intercity networks by dialing 11 digits instead of the presently required 22.

According to an MCI spokesman, it has cost Northwest "about $400" to make the change.

Last month, a second equal access agreement, with Sugar Land Telephone Co., was announced. Sugar Land is located in a Houston suburb and provides access to the entire Houston metropolitan area.

Bell Unveils Plan to Restructure BOCs Into Seven Regional Groups

(Continued from Page 1)

Each of the seven proposed Bell operating groups would be larger in terms of assets than General Telephone and Electronics Corp. (GTE), the nation's biggest independent telephone carrier. However, GTE manufactures terminal equipment and offers a packet-switched public data network service through its Telenet subsidiary.

By comparison, under the terms of the proposed consent decree, the Bell operating companies can offer only local exchange and exchange access service.

There is also some concern that the Bell operating companies pose a competitive threat. According to A.C. Viebranz, GTE senior vice-president, the seven regional groups "make it more unlikely that their procurement practices for us and other equipment manufacturers will change."

One of the major aims of the government in filing suit against AT&T seven years ago was to help independent terminal makers sell more of their equipment to the Bell operating companies.

The new scheme has been approved unanimously by the affected Bell operating company presidents and AT&T officers, the company said. The plan was developed by a task force composed of AT&T and Bell operating company officials. Five similar groups are working on other changes mandated by the proposed consent decree.

One of those groups is concerned with a provision permitting some operating company functions to be centralized. The group is defining the specific functions. A personnel task force is working on labor relations considerations.

The other groups are studying exchange area boundaries, allocation of the present telephone plant between the operating companies and AT&T and implementation of an access charge system to replace the present separation/settlement process that reimburses local carriers for their costs in supporting long distance communications service.

FCC Orders AT&T to Offer T-1 to All Users

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The Federal Communications Commission (FCC) has ordered AT&T to make available to all users a new T-1 access channel costing three to four times less than similar Dataphone Digital Service (DDS) facilities.

The 1.544M bit/sec channel originally was part of a satellite network that AT&T developed for R.R. Donnelley & Sons, Inc., one of the nation's major printers. Last May, however, Satellite Business Systems (SBS) complained that the new service would discriminate against other users which, if they wanted similar capability, would have to lease far more expensive DDS channels.

The commission decided recently that SBS was right. AT&T was told not only to file tariff amendments making the new T-1 facility generally available, but also to include in this tariff, directly or by reference, "all relevant interface specifications."

Donnelley Network

The proposed Donnelley network involves transmission by satellite among three points — Coram, N.Y., Lancaster, Pa., and Warsaw, Ind. — utilizing 10-meter earth stations connected to 1.5M bit/sec T-1 access channels. The channels at the latter two points are short. At Coram, however, AT&T plans to install an 84-mile T-1 link connecting the earth station with Donnelley offices in New York City. It is this facility that was the subject of the FCC's recent decision.

Since that decision involves facilities that can be used to provide wideband, all-digital service within a metropolitan area, all prospective users of such facilities presumably will benefit.

One question left unanswered by the commission's recent ruling is whether a user of the to-be-tariffed T-1 channel will have to employ a channel service unit (CSU) as the interface between its terminal and the network. The CSU is obtainable only from AT&T.

SBS Argument

Currently, CSUs are mandatory on DDS channels. However, SBS, as part of another commission proceeding, has asked that this requirement be removed for specialized carriers. The company argues, in effect, that it can provide the necessary circuitry for much less than AT&T charges. SBS, along with GTE Telenet Communications Corp., also insists that the charges for DDS are not cost-based, that they now provide the company with an "unreasonably high" rate of return, to quote the latter company.

The next act in this drama seems likely to begin shortly.

Last January AT&T responded to SBS's charges about DDS by saying, "Network channel terminating equipment such as the CSU is needed to provide and maintain network service in an efficient manner and to present well-defined interfaces to customers."

Matchmaker Firm Locates 'Extravagant Valuables'

By Bruce Hoard
CW Staff

LOS ANGELES — Looking for a private island close to New York City? No problem.

Like to buy James Bond's 1965 *Goldfinger* Aston Martin? This little gem comes complete with twin side-mounted machine guns, revolving license plates, operable ejection seat, antivillain oil slick maker, nail spitter and tire slasher. Drive it away today for only $250,000.

How about Elvis' concho belt? Babe Ruth's 1947 Lincoln Continental? An ancient mastodon tusk?

These are among the more exotic "extravagant valuables" available to customers of The Investment Matchmaker, a computer-based matchmaking company here for people who don't have to ask "How much?"

The Investment Matchmaker grossed $1 million in revenues last year by using its Cromemco, Inc. computer to produce detailed readouts for the 2,500 sellers and 5,000 buyers whose needs and names are stored in it.

Of the company's 15 employees, three use portable terminals to program the main computer. Many of the other employees are investment experts who will use the portable terminals to make extravagant matches at remote locales, according to company Vice-President Michael Greenwald.

Sellers get their names out to wealthy buyers through the readouts and advertisements in entertainment industry publications (some 50% of their customers are in show business). It costs between $400 and $1,000, depending on the amount of data processing needed, Greenwald said. Buyers pay $45 to list their needs.

Looking for a T-Bird?

"Let's say you're looking for a T-Bird," he said. "You tell me you're looking for a 1955 only, you're only looking for a white one, you're only looking for one that is in restored condition, you don't want an original. You only are looking for one under 50,000 miles, you're only looking for one on the West Coast. All that will go into the computer."

From there, the company will match those characteristics with the people whose cars fill those qualifications. All those details mean this will cost closer to $1,000 than $400.

The firm chooses not to render its service on a commission basis because only a small percentage of the approximately 300 people it talks to daily actually consumate deals.

Greenwald was excited by a recent listing he called "the most unique item we've ever taken on." The Investment Matchmaker is now offering a lock of George Washington's hair. The lock is part of a gold and pearl pendant given by our first president to his aide-de-camp, General Trumbell.

When Trumbell died, he willed the pendant to Washington's first cousin. From there it was passed down through the family, eventually ending up in the hands of a present-day cousin, Jim Washington. No sentimentalist, Jim Washington. He wants to unload George's hair for a nifty $150,000.

The computer also helps the company avoid legal snafus. For example, the Securities and Exchange Commission prohibits public solicitation for investors in oil and gas leases. There is no such problem for the Investment Matchmaker.

The typical customer deals in slightly more mundane properties such as Porsches, condominiums and beach property, Greenwald said.

Just how rich are his customers? "You can bet we're dealing with the top 10% of the country in terms of income level," Greenwald replied.

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"Got your assembler language text yesterday and stayed up half the night reading it. The book is great."

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East Hartford, Conn.

3) These books are organized by function. A complete subset of BAL is presented in the first three chapters of the book, and later chapters cover such functions as debugging, table handling, subprogram linkage, and file handling. When material is organized in this way, you learn more quickly because you always see purpose

4) Each book contains dozens of complete program listings. They start with card-to-printer programs and end with programs that create and retrieve direct files. In between there are listings for routines and programs that perform code translations and input validations, set up the linkage between mainline modules and subprograms, load and use tables in storage, create and retrieve sequential and ISAM files, and so on As a result, you will have many models of professional coding techniques upon which to build

"As I read through the book and began formulating questions, I found that every question was answered shortly afterwards. I have never felt so comfortable with a subject that has always made me a little uneasy."

Programmer
Indianapolis, Ind.

Content

The intent of these books is to develop a basic programming skill in assembler language As a result, the initial emphasis of each book is on a professional subset of BAL along with the related debugging skills If you did nothing more than master this material (chapters 1-5), I think you would justify the cost of the book several times over

Beyond this, table handling, subroutine and subprogram linkage, and sequential and ISAM file handling are given primary emphasis. Since these are common programming functions, this material is valuable background regardless of the language you normally use

"Your book has been a tremendous help to me. I would recommend it to anyone."

Systems Analyst
Omaha, Nebraska

Finally, these books show you how to write macro definitions (great background for working with software packages), how to code bit manipulation and translation routines, how to isolate the fields in free-form input data (a common function in teleprocessing programs), and how to work with direct files. This type of material starts you on your wey to the more sophisticated tasks required in a computer installation

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Relative Performance[1]	105	46	23	26	50	233[6]	—	62	26
Mips[2]	2.6	.72	.42	.45	.93	4.1[6]	—	1.1	.46
Memory Size In Bytes (Min-Max)	512K-8M	1M-8M/ CPU Module	128K-8M	1M-2M	512K-4M	512K-16M	1M-4M	1M-4M	256K-2M
Purchase Price[3] (Memory Size)	$305,000 (2M)[4]	$123,300 (2M)	$16,800 (256K)	$293,200 (2M)	$49,900[5] (512K)	$196,900[7] (2M)	$140,500[8] (1M)	$221,925[9]	$46,500[10]
Lease Price (Lease Term)	None	None	None	None	None	None	None	None	None
Machine Cycle Time (Nsec)	300	125	250	220	250	250	600	75 (per processor)	105
Channels (Min-Max)	1-6	Not Applicable	12	2	7	32	1-4	10	4
Cache (Buffer) Size	8K/CPU	None	None	16K	None	8K	None	8K	None
Bus Architecture?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Price Per 100 Bytes Of Main Memory	$19,000 $31,000 (2M)	$12,500 $10,000 (2M)	$10,000	2,000	$16,900 $25,900 (2M)	$16,900 $25,900 (2M)	$25,000	$10,000	$10,000

1. CW estimates based on vendor-supplied information. (Relative performance ratings are based on an IBM 370/158-3 equaling 46. These numbers are designed to put the processor into perspective with other systems. It is not a buyer's guide. All systems are not alike. They use different operating systems, instruction sets and architectures and, therefore, cannot be directly compared. In addition, actual relative performance may vary with the application, peripherals and software.)
2. CW estimates.
3. Includes processor, console, power supply and minimum tape and/or disk drives. In some cases, price also includes operating system software.
4. VAX-11 purchase prices include processor, console, power supply, operating software and a minimum disk drive configuration.
5. Includes system console, power supply with battery backup, 27M-byte cartridge disk drive, selector channel and disk controller.
6. Performance figures arrived at using PE's optional Fortran VII Z universal optimizing compiler. Figures without compiler may be up to 60% less, depending on user application.
7. Price includes processor, terminal console, 80M-byte disk, dual-density tape drive, floating-point processor, power supply with backup and 10 communications lines. Fortran VII Z can be licensed for a one-time fee of $24,950.
8. Price includes 288M bytes of disk storage, four terminals, a 300 line/min printer and tape drive.
9. Includes processor, system console 12 terminal ports, 120M-byte disk drive and magnetic tape drive.
10. Includes processor, system console, four terminal ports and 27M-byte disk drive with cartridge tape backup.

Superminis Offer Mainframe Power, Mini Cost

Product Spotlight

(Continued from Page 1)

ties and high price tags, these systems initially were mainly aimed at the scientific arena.

A number of 32-bit vendors, led by Prime Computer, Inc., have since awakened to the fact that the business sector is interested in machines that are cheaper than full-scale mainframes while at the same time offering enormous processing power.

However, despite all the activity that the makers of 32-bit minis have generated in the past, the real action is still to come.

Although 32-bit systems accounted for about 7% of worldwide minicomputer revenues in 1980, that figure will expand to 15% by 1983, according to market research figures provided by Data General Corp. On an even more optimistic note, MSRA, Inc., a New York-based research firm, predicts that the supermini market will grow by about 56% each year until 1985.

Move to Commercial Area

The biggest push by supermini vendors will be into the commercial processing area, especially into applications that involve a high degree of transaction processing. In fact, some analysts see the 32-bit machine's commercial push growing by about 40% per year.

There are a number of reasons for this migration from the scientific world. One is that superminis are price- and performance-competitive with small mainframes. Another is that the 32-bit machines are more adept at multiuser interactive processing than most mainframes.

Finally, superminis let users that were previously limited to time-sharing because of the price of a giant processor afford a dedicated in-house computer.

The majority of 32-bit breakthroughs and development will take place in the area of software. Currently, slightly less than half of the software geared to run on 32-bit processors is written to perform in a 32-bit environment, according to Le-Ellen Spelman, vice-president of MSRA. Most of the presently available software is based on 16-bit architecture and is inherently unable to take full advantage of the 32-bit computer's processing powers.

Some vendors may disagree with Spelman's philosophy. They would claim that the software disadvantage can be viewed positively by users who want a 32-bit system but do not want to invest the time and money to convert their software. Formation, Inc. of Mt. Laurel, N.J., for example, offers a 32-bit minicomputer system that performs like an IBM 4331 and is completely compatible with IBM 370 software.

Nevertheless, the amount of available 32-bit software will expand slowly because of the time it takes to develop software packages and the size of investment needed by vendors to produce worthwhile programs, Spelman explained.

Most Heated Battles

The most heated battles in the 32-bit market will probably occur between low-end 32-bit computers — such as PE's 3210 and Charles River Data Systems, Inc.'s Models 68/10 and 68/80 — and high-end 16-bit minicomputers. More than one industry analyst has predicted the ultimate demise of high-end 16-bit systems because of the more attractive price/performance ratios of the growing flock of small 32-bit computers.

One company that seems particularly vulnerable to attack by low-end 32-bit — especially from its own ranks — is Digital Equipment Corp. More and more vendors are targeting their machines and systems prices against DEC's PDP-11/70 minicomputer. In addition, there are rumors that DEC's own VAX-11 superminis may soon be expanded to include models that technically kick the pants off the 16-bit high-end PDP machine.

DEC presently has absolutely no plans to discontinue the PDP-11/70 or other computers in its line. However, MSRA's Spelman predicts that because of encroaching technology the firm may eventually replace all of its products with 32-bit computers.

"Current 16-bit superminis will be around for a while because old products don't die that easily," Spelman explained. "But in terms of new product introductions, I would expect they would be 32 bit."

Despite the rosy future predicted for 32-bit machines in commercial processing, the superminicomputer vendors will not ignore the scientific users' thirst for more processing power.

Multiuser Environment

DEC recently unveiled the VAX-11/782 system, which is actually two tightly coupled asymmetric VAX-11/780 processors tied together by a shared memory subsystem [CW, Feb. 1]. Geared for compute-intensive applications in multiuser environments, the system is said to be 80% more powerful and costs only 40% more than a single-processor VAX system.

More vendors are expected to double up on processors, both to achieve added power and to provide much-wanted system redundancy — particularly to time-sensitive commercial users. A number of companies — such as the New Jersey-based PE — are actively investigating the possibilities of adding two or more processors to a single system. They are also seriously examining such firms as Tandem Computers, Inc. and Stratus Computer Corp., which have redundant superminicomputers on the market.

"Nonstop computing in the commercial area is practically a requirement," pointed out Richard Donnelly, PE's product manager for computer systems.

This quest for fail-safe computing, he added, "will spill over into the technical field."

For First Time

Deaf Lawyer to Use Terminal in Top Court

WASHINGTON, D.C. — The U.S. Supreme Court has granted a deaf lawyer permission to use a CRT terminal when he argues a case asking a school system to provide a deaf student a sign-language interpreter.

The decision marks the first time the Supreme Court has allowed the presence of any recording system other than its own during arguments.

Attorney Michael Chatoff, an editor for West Publishing, a law book publishing firm in Mineola, N.Y., will present the oral arguments in the case of Amy Rowley, a deaf schoolgirl in Westchester, N.Y., who wants a sign-language interpreter in her fourth-grade class. "I became involved because I'm one of the few attorneys involved with the legal problems of deaf people," Chatoff said, adding he is a friend of Rowley's father.

When the case is argued at the Supreme Court, a stenographer in the courtroom will relay the justices' questions to Chatoff via the CRT terminal. "All I know is that it's called 'Realtime,'" Chatoff said. "In the district court hearing for this case, I used a more primitive screen."

At issue is the 1975 Education for All Handicapped Act. The Supreme Court will decide whether the law requries school districts to provide sign-language interpreters to deaf children in classrooms.

"I've conducted two trials in my life," Chatoff said, who obtained his degree in 1978. "Mostly my practice doesn't require court appearances."

Bell Execs to House: Leave New AT&T Alone

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The "new" AT&T must remain unfettered if it is to compete effectively at home and abroad, phone company officials testifed before the House of Representatives Telecommunications Subcommittee last week.

Since most of Bell's competitors — including those within the computer industry as well as corporate telecommunications users — disagree with this approach, it promises to become a major issue in the continuing debate over national telecommunications policy.

AT&T Executive Vice-President Morris Tanenbaum delivered the clearest statement of his company's position: "The modified decree [the proposed settlement of the U.S. vs. AT&T antitrust suit] eliminates any need for AT&T to be classified as a 'dominant carrier.'"

Tanenbaum agreed that AT&T is clearly the "primary provider" of long-distance communications service, but insisted that the test of a dominant carrier is whether it can limit market access and raise prices without losing a substantial number of customers.

Doubled Revenues

In the last quarter of 1981, he added, "MCI [Communications Corp.] doubled its revenues compared to the similar quarter of 1980 . . . Simple arithmetic . . . shows that if Bell competitors in the intercity long-distance market continue to increase their revenue annually at a rate of 50% . . . these companies would capture about 20% of the market in five years."

By 1986, this loss, added to an estimated 15% loss of toll revenue to the divested Bell operating companies plus access charge payments, will reduce "AT&T's net [long-distance] revenues to less than 50% of the total long-distance revenues earned by all carriers," Tanenbaum said.

His key point was that because AT&T's share of the long-distance market is declining, the phone company "should not have burdensome restrictions placed on us that are not required of all interexchange, terminal and information services suppliers with whom we must compete."

Tanenbaum said that a number of such restrictions are incorporated in H.R. 5158, the proposed rewrite of the Communications Act of 1934, which the House of Representatives Telecommunications Subcommittee is now drafting.

For example, H.R. 5158 would force Bell to establish "limited" separate subsidiaries, Tanenbaum said. "This structure ignores the essential nature of the new telecommunications environment, which is based on a merging of computer and telecommunications technologies. Our competitors are already far advanced in developing products and services that are integrated into highly computerized networks. These requirements also add costs and inefficiencies that our competitors will not have to bear."

AT&T's proposed Advanced Communications Service provides a good illustration of how H.R. 5158 puts

(Continued on Page 12)

Bell Operating Companies Endorse Arrangement

WASHINGTON, D.C. — Last week's hearings before the House of Representatives' Telecommunications Subcommittee also featured testimony from presidents of several to-be-divested Bell operating companies. They all endorsed the new arrangement and, in the process, disagreed with earlier statements to the subcommittee by public utilities commissioners and others who insisted that divestiture on the terms specified in the settlement agreement threatens the financial viability of the operating companies.

The Bell operating company executives who testified represented South Central Bell, Southern Bell, New Jersey Bell, Pacific Northwest Bell and New York Telephone Co. They contended that higher access charges, revenues from Yellow Pages Directory customer lists, redefinition of local-exchange boundaries and new services will balance whatever revenue sources they lose to AT&T as a result of divestiture.

The new exchange boundaries, for example, will rearrange each Bell operating company's existing service territory so that it can retain some of today's intrastate toll business.

Among the new services that New York Telephone will be called upon to offer, its president, Delbert C. Staley, said, will be "communication between persons and machines, including voice recognition and machine answer-back; video teleconferencing; call management and distribution; interpremises office communications, including electronic mail and computer-to-computer needs"; and electronic banking.

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Management Style Called Key to Productivity

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Many attempts to increase productivity through advanced information processing technology are terribly misguided and doomed to failure, according to Dr. Michael Maccoby, keynoter at the annual Federal DP Expo, held here last week.

It is not that the technology is inappropriate to increased white-collar productivity — indeed, it is critical to it, Maccoby said. The problem, he explained, is that the end users — who ultimately determine the success or failure of any automation — are too often ignored in planning and implementing new systems.

Consequently, "there is a great danger that much of the new technology will become a boondoggle," according to Maccoby, director of Harvard University's Kennedy School of Government Project on Technology, Work and Character.

Maccoby argued for a "fundamental change in management approaches" as the only answer to the contradictory desires for less bureaucracy and a simultaneous increase in government services.

The trouble he foresees, however, is that government and business leaders are prone to seek productivity gains "in exactly the wrong way" by working from a management perspective rather than from an employee perspective and by assuming they know what motivates workers.

CW at Federal DP Expo

Research shows, he said, that new office technologies can improve or hurt productivity. "The key is tha way it's managed," he said. Productivity gains are achievable only when the users are involved in at least some aspect of design and implementation.

"There are many examples of unconscious sabotage" in office environments incorrectly automated, according to Maccoby. These "so-called accidents" are the natural expressions of employee anger at losing their identities and organizational power because of poorly planned automation.

"It's hard to change management styles," Maccoby acknowledged, adding most managers today are "too soft and mushy," incapable of making decisions, rather than "too tough and hard." It is not that they refuse to listen to their employees, it is more a problem of their not knowing how to communicate, he said.

But without some sweeping changes in management practices, "new technology will cause rather than solva problems," he reiterated. He suggested that it would be more useful to American organizations to adopt tha best U.S. corporate management styles, instead of — as some have suggested — emulating modern and very successful Japanese management.

Maccoby drew for his audience a broad outline of a management model to meet the goal of increased productivity through new technology. What is needed, he said, is:

- Management that clearly communicates its goals and values.
- System design processes by management that consider organizational impact of new technology — manpower costs, product development changes, career development possibilities, worker health, etc.
- Recognition that practical techniques of user involvement often require worker retraining.
- Management that is not rigid, but realizes productivity enhancement is a continuing process involving constant change, flexibility and openness to new ideas.

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'New' AT&T Must Be Unfettered, Bell Execs Tell House Hearings

(Continued from Page 11)

the new AT&T at a disadvantage, according to Charles Marshall, AT&T'a recently appointed executive vice-president in charge of unregulated entities.

Marshall pointed out that other companies (GTE Telenet Communications Corp., Tymnet, Inc. and Control Data Corp. were specifically mentioned) already market "similar offerings."

Noting that IBM "earlier this month introduced a competitive service ["The IBM Information Network," CW, Fab. 8]," Marshall said that H.R. 5158 would "balkanize AT&T into a number of arms-length subsidiaries, and thus the bill would effectively prohibit it [AT&T] from offering a fully integrated lina or communications and information-handling products and services — even though this is exactly how our leading systems competitors approach the market."

The subcommittee's chairman, Rep. Tim Wirth (D-Colo.), said that the AT&T officials were criticizing a bill drafted before last January's agreement between AT&T and the Justice Departmant was negotiated. Since many of H.R. 5158's provisions will now hava to be redrafted, the congressman indicated that tha criticism was largely irrelevant.

He also questioned Tanenbaum's statement that AT&T does not monopolize long-distance service. Wirth said that the phona company does not appear to have lost any customers as a result of last year's big rate increases for Wats, private line and long-distance tolls. According to Tanenbaum's definition, one sign of a monopoly power is the ability to raise prices without suffering a loss of business.

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Ask Washington for Direction

Governors: Support Lacking for Tech Education

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Why is it, California Gov. Jerry Brown wanted to know, that when it comes to the Pentagon the answer to every problem is more money, but when it comes to education — particularly in science and technology — the federal government insists money is not the answer?

Calls for more state autonomy and admonitions to do more with less sound fine in times of fiscal hardship, said Brown, co-chairman of the National Governors' Association Task Force on Technological Innovation. But, he suggested, Washington should at least be willing to help set goals for science education and manpower development for the technologies critical to national security and economic health.

"Is it appropriate to entrust the future of America to 10,000 local school boards?" he asked during the task force's meeting here last week. The meeting, which saw the states' preoccupation with President Reagan's federalism proposals spill over into debates on education and technology, brought together several dozen luminaries of the political, scientific, academic and corporate worlds.

Invited guests of Brown, fellow task force co-chairman Michigan Gov. William G. Milliken and half a dozen other state chief executives included House of Representatives Science Subcommittee Chairman Rep. George E. Brown Jr. (D-Calif.); American Association for the Advancement of Science Executive Officer Dr. William D. Carey; Sen. John Glenn (D-Ohio); IBM research director Dr. Ralph E. Gomory; Apple Computer, Inc. founder Steven Jobs; White House science adviser Dr. George A. Keyworth II; National Academy of Sciences President Dr. Frank Press; National Science Foundation Director Dr. John Brooks Slaughter; and Rep. Tim Wirth (D-Colo.), chairman of the House telecommunications subcommittee.

No Solid Consensus

Convened during the governors' annual meeting, the task force produced no solid consensus of opinion on how to best usher in the new technological age of computers, communications and information, but in three hours of debate it did provide a forum for airing numerous related problems from the critical shortage of high school mathematics teachers to vicious price-cutting competition from Japanese electronics manufacturers.

A proposed resolution circulated during the meeting said, "Our present commitment to innovation and research and development is insufficient and thus threatens our national security and economic well-being."

In addition, it said, the U.S. needs "rapid commercial development of the information technologies now restructuring our economy." Therefore, the resolution said, the states and the federal government should join with business, labor and academic leaders to:

- Channel capital investment toward technological innovation and transformation of our economic base.
- Demand excellence in math, science, engineering and computer sciences in our schools and universities.
- Provide sufficient vocational education and on-the-job training for the new jobs in microelectronics, computers, robotics telecommunications and biotechnology."

While the task force met, the majority of the state leaders listened in an adjacent, larger conference room as White House budget director David Stockman detailed Ronald Reagan's "new federalism" program — a multibillion dollar plan to turn back complete responsibility for over 40 programs to the states, ranging from road construction to food stamps.

Stockman's Audience Tough

Stockman's audience proved a hard sell, as did participants in the task force meeting who listened as Reagan's science advisor Keyworth defended current federal support of R&D and education.

"We've been guilty of throwing our money at our problems with a lack of

(Continued on Page 14)

Cheap, Foreign Competition Seen Rising on Japan's Horizon

WASHINGTON, D.C. — U.S. firms trying to compete with lower priced goods from Japan are not the only ones with this problem.

Japan itself is now facing the same difficulty.

The Japanese have overtaken U.S. companies in the manufacturing of goods with fewer than 50,000 components by emphasizing process technology to offset the country's lack of scientific capability, Jodi Arai, manager of U.S. office of the Japan Productivity Center, told the National Governor's Association recently, adding Japan's new market power is already being challenged by other countries with cheaper labor.

'Japans of Tommorrow'

What Arai said was that while Japan can beat the U.S. in making stereos and automobiles, it cannot even begin to build a space shuttle. But that might change when countries such as Mexico, Korea and Taiwan become the Japans of tomorrow, he contended. When that happens, he told the governors' Task Force on Technological Innovation, the Japanese will press the U.S. in more sophisticated technological areas. Then, he suggested, the U.S. and Japan will find themselves in the same boat and may have to band together.

"Perhaps Japan and the U.S. can share the responsibility for basic research," he suggested in response to an observation by Dr. Frank Press, president of the National Academy of Sciences. Press had commented that Japan has built its economic strength on products derived from U.S. research and development.

U.S. Emphasis

Conversely, Dr. Ralph E. Gomory, IBM research director, and Dr. Edward E. David Jr., president of Exxon Research and Engineering Co., said that the U.S. has to place more emphasis on its own production methods and management practices.

The point of Arai's statement was summed up by task force co-chairman California Governor Jerry Brown, who said that when Japan is pressed by cheap labor markets, it is going to press the U.S. even further. "We're a shrinking, aging minority on this planet," Brown said, suggesting there are billions of people in the world willing to work for less than American workers. Soon, he added, they will be given the technoiogy and capital to do so.

The labor component of innovation problems may be the most troublesome, according to Brown, who noted estimates that 40 million American jobs could be lost through new technology. The U.S. must give workers a stake in technological advances or they can halt them, he said. "We're not going to innovate on the backs of American workers," he said.

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EASTERN

Turnover Reduced, Too

Quality Circles Raise McAuto's DP Productivity

By Brad Schultz
CW New York Bureau

ST. LOUIS — "Quality circles" — a management technique popular with Japanese manufacturers — helped raise DP productivity significantly here at McDonnell Douglas Automation Co.'s (McAuto) Health Services Division.

The technique also helped reduce the software service bureau's DP staff turnover rate, according to McAuto Vice-President William T. Corum, who told *Computerworld* recently how his organization came to try quality circles, what the management technique did for productivity and morale and how other DP organizations can achieve similar benefits.

Many of the theories behind quality circles originated in the U.S., but the technique is used more widely in Japan than other nations, according to people trying to popularize the concept in the U.S. [CW, Jan. 18]. Quality circles are groups of up to about 10 employees, convened regularly (typically for an hour per week) to discuss work-related problems under the guidance of a circle leader.

Leadership Roles

The leader is trained for this role, but commonly has a full-time role as line manager of most members of the circle.

In some organizations, circle leaders are distinguished from "facilitators," who coordinate several circles on a full-time basis under supervision of an executive steering committee or a chief facilitator. Bill Raymond is chief facilitator for a dozen McAuto quality circles and reports to Corum.

At McAuto, the leader of each quality circle is called a facilitator and fills that role on a part-time basis. The smallest circle in the Health Services Division has four members, Raymond said, and the largest has 11 members. Ten of the 12 circles are for professional (salaried) DPers, Corum added, and the other two are for DP personnel paid by the hour.

McAuto initiated its quality circles program early in 1979, following a quest by members of a productivity steering committee to find new ways to get more output from the same input, Corum noted. The eight people on that committee attended seminars on productivity given by a number of different organizations.

Houston-based American Productivity Center held seminars that convinced members of the committee to give quality circles a try at McAuto. Other approaches to productivity raising were also adopted, Corum said, and McAuto management is reportedly convinced that quality circles have helped significantly, but unsure of the degree to which quality circles alone produced benefits.

Among the other approaches was a management development program, which helps McAuto managers improve expertise in leading and coordinating people, interacting with different departments and bringing resources to bear on corporate objectives. According to Corum, management is the key to raising productivity; productivity slumps, therefore, suggest management slumps.

McAuto also instituted an employee recognition program by which individual employees are named Most Valuable Players (typically, this award is made every month) and treated to luncheons with the president, a parking space (for that month) alongside the president or a family dinner on the company credit card.

What to Measure?

Further, McAuto began trying to measure productivity. Corum rejected the idea of measuring programming productivity in terms of a ratio between lines of code and man-hours. Being responsible for capacity planning in the Health Services Division, he did not want to reward people for stretching program routines to the limits of available systems capacity.

The division eventually settled on measuring program "paragraphs" — routines featuring one logical point of entry and one logical point of exit, Corum explained. Programmers, thus, had an incentive to optimize the number of code lines between points of entry and exit.

As a service bureau, McAuto's prime qualitative index of productivity shifts is customer satisfaction, Corum indicated. By all these measures, plus subjective evaluations of staff attitudes and DP turnover statistics, quality circles and the other techniques tried since 1979 have paid off dramatically, the vice-president asserted.

Before these techniques were tried, McAuto's Health Services Division experienced a 20% to 24% annual turnover in DP staff — considered normal for the health services software industry. The figure dropped to 18% in 1979, Corum maintained.

The division's turnover in DP staff was only 16% in 1980, he added, and was 15% in 1981. Among suggestions from quality circles that led to operational improvements were those concerning communication with field representatives (basically, interactions between end users and software developers) and preventive maintenance.

Corum recommended the American Productivity Center as a source of information for users interested in quality circles. The center can be reached at 123 Post Oak Lane, Houston, Texas 77024.

State Heads: Tech Education Needs Federal Support

(Continued from Page 13)

discrimination," Keyworth declared. Maintaining "It is unreasonable to expect ourselves to be number one in all areas," he said, "We are learning to discriminate between the excellent and the mediocre, between the truly promising and the less promising."

Although the new federal budget puts R&D needs "second only to national defense" in priority and level of spending increases, Keyworth said the states "can play at least as important a role as the federal government" in promoting science and technology.

Keyworth's statement provoked some strong responses, particularly from Sen. Glenn, who called Reagan's R&D budget "penny-wise ... and pound-stupid for the long-term future of this country."

Many participants said that although more funds are needed, a lot can be done with initially little financing such as establishment of cooperative government/industry/academic programs to begin dissecting the problems and setting goals.

North Carolina Gov. Jim Hunt said, for example, that it does not cost a state any money to identify its own goals and needs or to raise its math and science requirements for high school graduation, college admissions and teacher certification.

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CONTROL DATA INSTITUTE

Women Told DP Not Best Route to Top Positions

By Bob Johnson
CW New York Bureau

NEW YORK — "Businesses use DPers as resources for the benefit of the institution, and because of that we have to look out for ourselves," Pamela A. McGhee advised during a presentation on career planning given during a recent meeting of the New York Chapter of the Association of Women in Computing (AWC).

McGhee, president of McGhee Enterprises, a DP management and consulting firm, maintained that since DP is considered a staff function in most line and staff organizations, it is usually not a direct route to powerful positions within a company. The DPer aspiring to those higher corporate levels must prepare some unique approaches, she said.

The computer specialist should decide which path to follow within the DP area itself before considering the organization as a whole, McGhee stated. The DP area has a line and staff hierarchy of its own, which must be dealt with in order to successfully formulate a career plan, according to McGhee.

The speaker described the staff areas of DP as the administrative and technical services departments. Systems development, maintenance and operations are line areas, according to McGhee.

After about five years in one area, the DP technician should make a choice about future direction, she said. Female DPers who are usually in staff positions that traditionally do not require command decisions must be especially aware of these crucial moves, McGhee said.

"If you're looking for a career path within DP, make that important move and try to get acquainted with a fast-tracker in the area or in an area supported by DP," she told the audience.

Within the technical areas of DP, she continued, the monetary and career ceiling is usually reached within the five-year period. If more money and managerial positions are what the technician is looking for, a switch must be made.

"The other alternative is technical services, which is not the route to power," McGhee said. "One cannot be a supertech and a supermanager."

She added that female technical specialists find it exceptionally difficult to move into management areas.

"How you are perceived by the people beyond the first-line DP manager is crucial. The projects you are working on must be viewed as important by the entire organization," she said.

Most important to career plans is the end-user's perception of the work being accomplished, according to McGhee. "Users are powerful; do not ignore them. A powerful user can make opportunities for the DPer that weren't there before," McGhee said.

McGhee stressed that being part of the informal power structure in an organization is also a key to gaining success. This area is not documented on the company flowchart. But it is a network in which important decisions are made concerning a person's abilities and potential, both in and out of DP, she said.

Small IBM Users Form N.E. Group

MANCHESTER, N.H. — A small systems user group named the IBM System Help and Resource Exchange (Ishare) has been formed in the Tri-State area of Maine, New Hampshire and Vermont to provide communication between users of similar IBM hardware and software.

Membership is open to any Tri-State-area user of IBM Series/1, 5100, 5110, 5120, System/23 Datamaster, System/32, System/34 and System/38. Ishare will meet for general sessions on odd-numbered months, except July. Specialty sessions are planned for even-numbered months, except August.

Dues are $25/year for membership. Associate memberships are available for vendors or suppliers having any of the same equipment. More information can be obtained from Steve Ferreira, Felton Brush, Inc., P.O. Box 538, Manchester, N.H. 03105.

DSS Conference Site Changed to Hyatt

BOSTON — The site of the "Evaluating Decision Support Software (DSS): A Managerial Perspective" conference originally scheduled for March 17 at Suffolk University has been changed to the Hyatt Regency Hotel in Cambridge, Mass.

The registration fee of $325 remains unchanged.

The conference is being sponsored in cooperation with local chapters of North American Society for Corporate Planning, Planning Executives Institute, The Institute of Management Sciences, Society for Management Information Systems, Association for Computing Machinery, Quantitative Discussion Group and Massachusetts Association of Public Accountants.

Further information about registration can be obtained by contacting the general conference chairman, Warren Briggs, at DSS Conference, 215 First St., Cambridge, Mass. 02142.

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CW 3/1/82

David Schwertner

Robert Drury

Shirley J. Usatin

John Seymour

Managers on the Move

DAVID P. SCHWERTNER has been named vice-president of management information services for Richman Brothers Co. in Cleveland.

Schwertner will be responsible for all data processing operations of the firm, including its subsidiary, Anderson-Little Co. of Fall River, Mass.

Since joining Richman Brothers 22 years ago, Schwertner has held a number of positions within the accounting and data processing departments.

•••

ROBERT C. DRURY has been appointed director of management information services for Pet, Inc.

In his new position, Drury will have primary responsibility for computer operations at Pet Plaza in St. Louis.

Drury joined Pet in 1970 as a computer programmer. For the past three years he has been in charge of DP research and planning for the corporation.

•••

SHIRLEY J. USATIN has been appointed vice-president and manager in automated data processing at Security Pacific National Bank in Glendale, Calif. In her new position, Usatin supervises a section in the Quality Assurance Division.

Before joining the bank, she worked for System Development Corp. and later worked in systems at the Los Angeles Police Department and also with the Los Angeles County assessor.

Usatin received a B.A. degree from the University of Redlands, Redlands, Calif.

•••

JOHN SEYMOUR, director of information systems for the New York *Daily News*, has been named a vice-president of the company. As director of information systems, Seymour oversees all areas of information systems, including commercial system development, publishing systems, computer operations and communications.

Seymour joined the paper as manager of systems and programming in September 1978. Prior to that he was director of development for the Depository Trust Co. in New York. He also served as assistant vice-president and senior planning officer for Security National Bank, Melville, N.Y.

Seymour received a B.A. degree in mathematics from Queens College of City University of New York. In addition, he earned an M.S. degree in operations research from New York University. Seymour is a member of Digital Equipment Corp. User's Group and the Sales Executive Club in New York.

•••

JOSEPH A. RUSSO has been named director of management information systems for International Mill Service, Inc. (IMS), Philadelphia, a subsidiary of IU International Corp.

Prior to his assignment at IMS, Russo worked for Westinghouse Corp. in Lester, Pa., in a number of capacities from 1974 through October 1981.

After earning a B.A. degree from Rider College, Lawrenceville, N.J., in 1970, Russo received an M.S. degree in 1974 from the University of Southern California at Los Angeles.

•••

KATHIE GOETSCH has been appointed manager of corporate support systems in the data processing department of Zurich-American Insurance Companies (Z-A) of Schaumburg, Ill. She is responsible for the premium, payroll/personnel, bureau, collections and loss systems.

Prior to joining Z-A, Goetsch was with CNA Insurance Co. in various data processing management positions.

She received a B.S. degree in mathematics from Coe College in Cedar Rapids, Iowa and earned her MBA degree from the University of Chicago.

Corrections

The article that described the Salcris Corp. Chrono-Guard Software Marketing System [CW, Feb. 15] indicated that users of the system must purchase a key for $300. The key is purchased only by authorized dealers of the software packages, who pass it along to their customers.

The user of the service pays $300 for a lock, which can be used to protect any number of software products a user employs.

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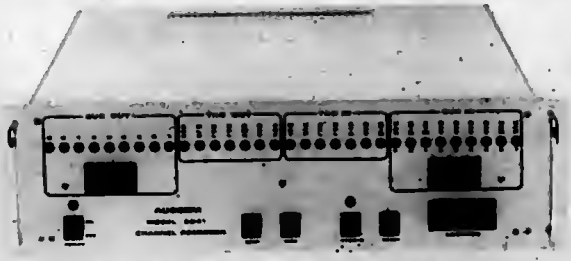

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Planning Escape From City? Data Centers Offered Tips

By Bob Johnson
CW New York Bureau

NEW YORK — High rents, inadequate space and computing problems are all good reasons for picking up a company's computer center and moving it out of a metropolitan area. However, DP executives may be uninformed about what is really involved in a move and should think twice before making such a commitment.

This advice comes from architectural and engineering firms that have been forced to learn the nuances of the DP industry.

Now that DPers and site designers must act as a team when a move is considered, problems sometime arise concerning the methods and procedures necessary to make the change. There are firms, however, which are aware of the situation and can point out what needs to be done.

DP Moving Firm

One such firm is DP Facilities, Inc., a New York-based architectural, engineering and construction company that has been involved in DP site moving and building since 1956. Company President Martin Gerard said that although moving a DP center may be justified because of high rents and increasing volume of hardware, only about 30% of his national clients actually relocate.

"We have been able to refurbish most DP facilities that have growing pains," he said. This alternative can be extremely cost-effective for a company, considering that Gerard estimated the average cost of moving a twin IBM CPU shop with standard peripherals out of New York City into New Jersey at about $2 million.

Gerard said that his company handles all aspects of a shop's move from the preliminary feasibility study to the final hardware hookup. "The major difficulty when attempting a move is the planning and . . . having the client arrange for support systems hardware to guarantee uninterrupted processing," he said.

He added that the working relationship with DPers can sometimes be difficult because DPers do not always make the right decisions when it comes to providing interim DP needs. As an example, Gerard stated, "One major cosmetics firm, which was a client of ours, spent nearly $800,000 on systems support hardware alone."

Consulting Advised

Gerard advised DP executives to talk to an architectural/construction firm that knows the DP side of a site move. "Some architects and engineers don't know how to move a DP facility," he cautioned. "Moving is a complex thing for people not exposed to finding the right location, or projecting just what it entails." An architectural firm should offer a menu describing the conditions to be met, he said.

Another New York architectural firm dealing with DP site moves is Haines, Lundberg and Waehler. Ted Hammer, director of the company's Banking Facility Design Group, said that an interesting thing happens when a computer installation move is considered.

"We have found that rising real estate costs, usually the first consideration made regarding a move, is becoming the last on the list when the actual move is analyzed," he said. Hammer explained that requirements of a new location such as available power grids, telephone switching/communications abilities and mail convenience must be studied before making a move. The needs of the labor pool, including recreation areas, nurseries and commuting options also should be considered, Hammer added.

Everything from power capacity, air conditioning and an uninterruptible power supply system to personnel density has to be considered, Hammer said. He explained that DPers often refrain from telling the architectural firm about their future plans, which can cause a problem. Items such as broadband cable facilities must be thought of before an installation is set up, he said.

A favorite question asked of DP managers scheduling a move is "What are their future plans that they haven't told anyone about yet?" Hammer continued.

Although moving a computer center does involve some pain and suffering, Hammer said that if the DPer is prepared, the move can be perceived as a fresh start.

Columbia University to Construct $5.2 Million Computer Center

By Bob Johnson
CW New York Bureau

NEW YORK — Columbia University will begin construction here next month on a $5.2 million computer science complex that school officials said will be "symbolic of the importance of computer science."

The new center will house extensive research equipment and facilities that will enable students and faculty of Columbia's two-year-old computer science department to design and build software systems and hardware.

Research will be conducted in such areas as construction and analysis of architectures for ultrafast computers, very large-scale integration chips, artificial intelligence and graphics.

Vendor Aid

According to the department's chairman, Dr. Joseph F. Traub, the university is currently talking to a number of vendors about supplying the complex with a variety of hardware this spring. Traub noted that when the computer science department began, IBM donated a substantial gift to Columbia to attract students and faculty.

Some of the work planned for the complex is on the cutting edge of the computer industry. Studies like distributed computation/complexity (the creation of faster problem-solving methods) will be undertaken at the new center, according to Traub, who plans to work with the school's other departments.

"All fields will be involved with computers in the future," he explained, "and the university will assist in teaching students in all of the professional disciplines."

Columbia is also negotiating with a number of government agencies for research work, according to Traub. The new complex hopes to attract funding from these agencies as well as from the computer industry.

Traub, who also headed the computer science department at Carnegie-Mellon University in Pittsburgh — one of the country's leading computer science schools — was brought to Columbia two years ago to build the department there. Traub said that his decision to go to Columbia was based partly on the fact that the school had the resources to build an exciting complex.

"The new computer science building is important because it gives us space indispensable to the realization of our vision of a department of international distinction," he said.

Columbia currently has 200 students majoring in computer science and approximately 3,200 students enrolled in computer science courses. Traub expects those numbers to increase to include nearly 1,000 more majors and 3,800 computer science students in the 1982-83 academic year.

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Depositors Sent Wrong Forms

CHICAGO — Approximately 32,000 depositors of the Clyde Federal Savings and Loan Asociation here received Federal 1099 forms bearing the name of a different savings and loan institution because of errors attributed to a programmer and a computer program.

The 1099 statements bearing the name of Calumet Savings and Loan were sent out by a Tel-A-Data Corp. computer, an outside computer firm used by Clyde, the 20th largest Savings and Loan in Illinois.

Clyde received a number of phone calls from confused clients wondering if it had merged with Calumet.

"The computer service company re-ran the 1099s and remailed them," Clyde President Thomas J. Martin said. A letter explaining the situation has also been mailed to customers, Martin added.

A corrected record has been forwarded to the Department of Internal Revenue as well.

A spokesman for Tel-A-Data declined to commment about the error, stating that "it was in the paper," referring to a Jan. 15 article in the *Chicago Tribune*. The *Tribune* quoted Tel-A-Data President John Humm as saying that the mistake was caused by "a combination of clerical error and the inability of the computer program to detect what was wrong."

Quality Assurance Forum Scheduled for March 25-26

CHICAGO — Dr. Carl Hammer, a DP consultant, will give the keynote address at the Second National Symposium on DP Quality Assurance, here at McCormick Inn March 25-26.

Hammer's address, "Doing It Right the First Time," will open the two-day conference sponsored by the Data Processing Management Association's Education Foundation.

Fifteen technical sessions are scheduled and will cover such topics as system inspections, DP quality circles, user quality responsibilities, measuring quality, estimate management, evaluating system effectiveness, risk analysis, quality assurance organizational strategies and interfacing with auditors.

Four full-day workshops will precede the conference on March 24. Topics include establishing the quality-assurance function, measuring the quality and cost-effectiveness of DP systems, effective methods for managing DP quality and effective tools to support project management methodologies.

Registration fee is $420 for the conference, $230 for the workshop and $585 for both the conference and the workshop.

Further information is available from the Conference Manager, U.S. Professional Development Institute, 12611 Davan Drive, Silver Spring, Md., 20904.

Edutronics Sets Training Meet For March 16-18

NEW YORK — "Tools for DP Training: From Planning to Performance" will be the theme of Edutronics/McGraw-Hill's International Training Conference to be held here March 16-18.

Besides Edutronics' display of its newly introduced computer-assisted instruction courseware, there will be presentations on such topics as "Planning and Controlling the Training Function," "Evaluation: A Pragmatic Approach," "Keeping Up With the New Technologies" and "Data Structured Systems Development."

Registration fees are $150 for the general public and $125 for Edutronics customers. More information is available from Edutronics/McGraw-Hill, Suite 3370, 1221 Ave. of the Americas, New York, N.Y. 10020.

Illinois School To Host Cumrec

CHICAGO — The 27th annual College and University Machine Records Conference (Cumrec) will meet here May 2-5. The conference will be hosted by the University of Illinois.

The theme of Cumrec '82 is "Accountability — A Positive Approach to Credibility." The conference, designed to bring together providers and users of data processing systems in higher education, will feature John Corbally, president of the MacArthur Foundation, as speaker.

J.A. Catrambone, university associate vice-president for administrative information systems and services, will serve as general chairman.

Conference sessions will be held at the McCormick Inn. Advanced registration is encouraged.

The $140 conference fee includes two lunches, a banquet and a copy of the proceedings. Accommodations and an optional spouse program are additional.

Registration material and additional information is available from Cumrec '82 AISS, Room 370 RRB, University of Illinois at Chicago Circle, Box 4348, Chicago, Ill. 60680.

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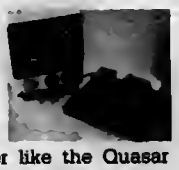

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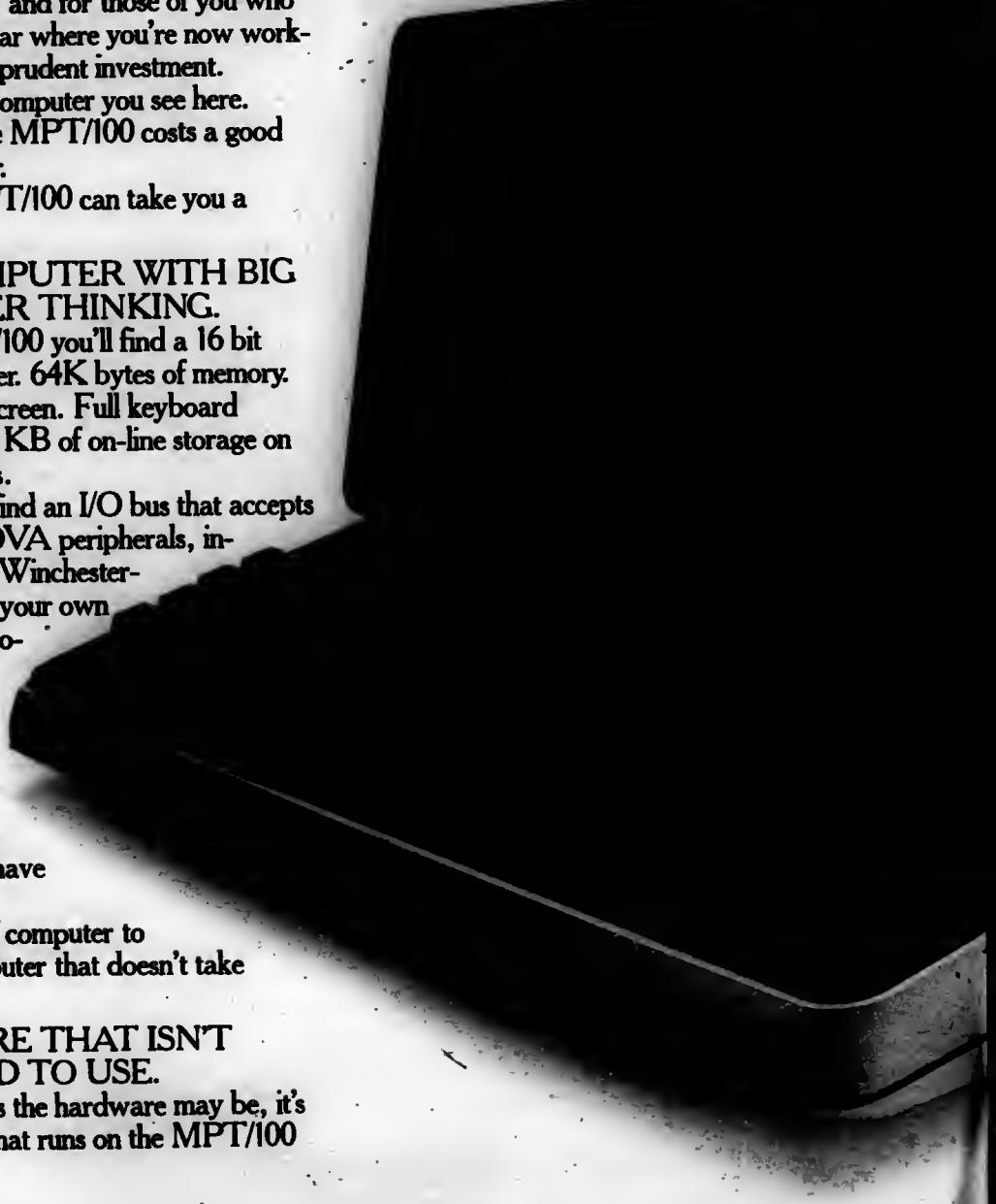

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Free DP Service Finds Apartments for Seekers

DALLAS — The newcomer was a stranger in town — just out of school, with a brand new job, a tight budget and no place to live.

In a city the size of Dallas, Houston, Atlanta, Denver or San Diego, finding the perfect apartment is a struggle — especially if you are new in town and can afford only $300 a month rent. It can be even worse if you have other complications, maybe like a dog and a waterbed.

There is a good chance that this newcomer will turn to Apartment Selector, a free apartment referral service. And chances are good that an IBM System/34 computer will help match the newcomer with the perfect apartment.

It happens thousands of times each year in eight cities across the country.

The Dallas-based Apartment Selector firm is able to play matchmaker successfully because of the store of apartment information kept on its System/34 computer.

12,000 Apartments

"We have information on about 12,000 different apartment buildings in the System/34," Kendall A. Laughlin, president and owner of Apartment Selector, said.

"Every building has five, six, seven or sometimes more categories in information, such as price, number of bedrooms, whether or not utilities are paid or whether or not pets, kids or waterbeds are allowed," he added.

With the computer, Apartment Selector can find a list of five or six apartment complexes in a city or a neighborhood that have one-bedroom unfurnished apartments in the $300 range and that also accept pets and waterbeds.

That eliminates the frustrating, time-consuming chore of wandering through the seemingly endless apartment jungles of north Dallas or southwest Houston.

The newcomer pays nothing for the service since Apartment Selector gets its finders' fee from the apartment complexes it deals with, he explained.

Last year, Apartment Selector rented 17,000 units. With an average occupancy rate of 1.6 people per unit, that means the firm helped about 27,000 people find housing. The company had gross receipts last year of more than $3.5 million, according to Laughlin.

"All of our offices share the central data," he said. "If we didn't have the computer, our local offices would be limited to a certain area of Dallas or a certain area of Houston. With the computer, all local offices can have information on thousands of apartments in all areas of the city."

Firm's Prospects

"Sometimes prospects come into the first neighborhood office they see, and it might wind up that a neighborhood across town is where they'd be most happy," he said. The firm's prospects range from 18-year-old college students to 75-year-old widows. Apartment Selector also has a program to assist corporations that are moving their employees.

Prospects are interviewed to determine what they want and what they can afford in an apartment. During the interview a lengthy questionnaire is completed.

The questionnaire also helps the company with another application run on the System/34. The questionnaire has a place for the prospect to tell how he discovered Apartment Selector, such as by the Yellow Pages, billboard ads or radio ads.

"With that information," Laughlin said, "we can determine the most effective means of advertising."

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Will Evaluation Systems Ever Fly?

Q Our company hired a consulting firm to help us implement a performance evaluation system. The data processing department was selected as the pilot. The canned procedure marketed by this firm is similar to the management by objectives methodology.

With so many forms, our paper pushers love it. But most of the managers and project leaders are very dissatisfied and literally refuse to use it. I am in the latter group.

The idea is good, but my gut feeling is that this turkey will never fly. Are you aware of any good evaluation systems? Where are they and what makes them successful?

A I have been exposed to a variety of systems, but surprisingly few that have been successful. Those that have experienced reasonable success tend to minimize paperwork requirements, emphasize on-going evaluator training and make sure someone has responsibility for quality control.

The probability of successfully implementing any standardized procedure is inversely proportional to the square of the paperwork involved. Paperwork should be simple, straightforward and provide the evaluator plenty of flexibility.

In an apparent attempt to justify the cost of the system, some commercial systems have five highly structured standardized forms where one with a little flexibility would have sufficed. Nothing will destroy a manager's interest quicker than excessive paperwork, especially if he is not too fond of the procedure anyway.

The implementers should conduct periodic refresher training sessions on the evaluation procedure. If this is not done, the evaluations ultimately become far too individualized. It then makes it impossible to make reliable comparisons between evaluations from different managers.

Apply these suggestions to your existing system. It will take a lot of work and cooperation, but can be done.

Q Five years ago, three of us were moved from the systems division to the operations division and a technical support group was formed. We are now eight with a data base administrator and growing rapidly.

As head of the group, I report to the operations manager, but informally receive my assignments from the systems manager. This somewhat awkward arrangement is necessary because of the operations manager's lack of interest in and knowledge of our function.

My pleas for organizational revision have little impact. Why?

A Technical support groups have not been around long enough to form traditional patterns in functions, much less organization. If a trend exists, it is to give technical support an organizational status equivalent to systems, programming and operations. This has been done successfully in both line and staff positions.

I would be happy to second your suggestions for an organizational revision.

Q I am currently enrolled in my second semester of Cobol programming at a junior college. I have a degree in economics and 10 years' experience with management information systems (MIS) — much of it with manual systems — in state government. I am interested in moving into a programmer/analyst position. My questions are:

1. Most want ads for programmers contain a requirement for at least one year's experience in programming. Is this meant to be actual job experience, or will two semesters of programming courses plus job experience in MIS satisfy a requirement for one year's experience?

2. If one or more years of actual programming job experience is required, are there part-time programming jobs available or would a programmer trainee position be the only way to get my foot in the door?

Turnaround Time
By Larry E. Long

A For the record, most computer-based systems are hard pressed to earn the title of MIS and I have yet to see a manual MIS. A reference to experience in "manual" MIS may be counterproductive.

A four-year degree, 10 years of experience in almost anything and a couple of Cobol courses are ample credentials for immediate entry into a programmer/analyst position. The demand is such that many companies are willing to absorb the cost of retraining. I would imagine that you would be hired at the entry level with a modest compensation for your experience.

Long is a professor at Lehigh University, a DP consultant and author. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.

Larry Long's List Of Professional Societies

Larry Long is compiling a list of professional DP/Computer societies and organizations. To be included, societies and organizations should send a brief description of their purposes and objectives to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.

• DIGITAL EQUIPMENT COMPUTER USERS SOCIETY (DECUS)

Purpose and Objectives: Decus is an international organization with more than 45,000 members worldwide. It was founded in 1961.

A nonprofit organization, Decus is supported and administered by Digital Equipment Corp., but actively directed by individuals who have purchased, leased, ordered or use a DEC computer, or who have a bona fide interest in Decus. Membership is free and voluntary.

Benefits derived from membership include information interchange with other users and DEC through special interest groups and local users groups.

Decus holds two symposia each year. These meetings are comprised of four intensive days of workshops, panels, tutorials and formal paper presentations. Decus maintains a library of approximately 1,700 active programs written and submitted by users.

Decus members have had significant input into DEC hardware and software design in the past. The society publishes a newsletter "Decuscope," symposia proceedings, special interest group newsletters and other Decus publications.

For More Information: Maryann Oskirko, Decus U.S. Chapter Manager, Decus U.S. Chapter Office, One Iron Way, MR2-3/E55, Marlboro, Mass. 01752.

• INFOSWITCH USER'S ASSOCIATION

Purpose and Objectives: The Infoswitch User's Association is a professional group of individuals who own or lease Infoswitch products to automate their telecommunications functions.

The Infoswitch User's Association also includes any users of products from Datapoint Corp.'s Communications Management Products Division. This includes the new digital private branch exchange from Datapoint.

Following are the objectives of the Infoswitch User's Association: to provide a channel of communication from the user to the manufacturer, Datapoint; to assist members in solving Infoswitch and telecommunications problems; to provide an opportunity to interact with other users and to exchange information pertaining to Infoswitch and telecommunications; and to help improve the professional competence and status of each member.

To fulfill these objectives, the Infoswitch User's Association meets twice each year, once in the spring and once in the fall.

For More Information: Ken Berry, Infoswitch User's Association, c/o Indiana University Purdue University at Indianapolis, Riley Hospital Room 1121, 1100 W. Michigan St., Indianapolis, Ind. 46223.

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Electronics Technology Called 'Revolutionary'

By Rex Malik
Special to CW‡

SANDERSTED, England — "The new electronics information technology is revolutionary — not evolutionary — because it has a broad spectrum of applications. It is now, after all, possible to add a mind and a memory to almost any implement for $50 to $100."

So said Dr. Alexander King, chairman of the Paris-based International Federation of Institutes of Advanced Study (Ifias) and a founding member of The Club of Rome, known for its early '70s study, "The Limits of Growth."

King gave the keynote address at a seminar on the Forward Assessment of Science and Technology (Fast) held here and previewed The Club of Rome's major study on the impact of microelectronics on society. That report, called "For Better or For Worse?" was due to be launched the first week of February at a conference in Salzburg, Austria.

Although the lead time between research and development and application on a substantial scale is a matter of decades, he said, we are now in a period of transition, one which will take three to five decades. Most of the industrialized countries can expect to face similar problems because the diffusion of technology across frontiers is happening very fast, he stated. However, there is an exception — the communist world. Continued censorship in communist countries will see to it that they maintain their low position in the economic league.

In general, King foresaw little technologically caused unemployment for the industrialized countries in the short term and a lot in the long term. He thought, too, that the conclusions of the Organization for Economic Cooperation and Development (OECD) group of officials that changes brought about by microelectronics will be greater and more obvious in levels and types of skill in organizational structures and management systems, rather than on the numbers employed.

Low levels of application in any individual country, he continued, may lead to its economy becoming increasingly uncompetitive, and this can easily produce indirect effects on unemployment that are far more serious than the direct displacement effect. Stated more crudely, jobs created in Japan may mean jobs lost in Europe.

Japanese Pacemakers

King's view was that the Japanese would continue to be the pacemakers. This would not be because of their technical skills, but because of their social organization. The nature of Japanese society, its social coherence, its industrial and human structures and its genius for reaching decisions through consensus would prove to be even more important than the technological considerations.

In this, the paternalism of Japanese industry would play a key role. The consensus mechanisms mean a strong loyalty to the enterprise on behalf of the workers, and this is reciprocated by management, King said.

It seems probable that Japanese firms will continue to find new markets, and this will give them the capability to absorb workers whose jobs otherwise would become redundant through automation.

The Western approach and the Western experience are different. The U.S. textile industry, for instance, over the next decade will spend $30 billion on retooling to make itself more competitive, but this will be at the cost of 300,000 jobs.

Paternalism Rejected

Western countries have rejected paternalism in industry and replaced it with the impersonal paternalism of the state. The state's response to technological unemployment, at least initially, will be through unemployment benefits. It is, thus, probable that the social constraints to automation, such as those already seen in the printing industry, will be very much stronger than the constraints operating in Japan.

Western countries, however, have to continue to take up the technology at a fairly rapid rate if they are to remain competitive. There is a conflict here between the need to preserve employment and the need to increase productivity and economic growth: This could be a severe dilemma for some Western countries.

"Those countries most successful in achieving economic success from the application of microelectronics," King said, "may be precisely those which will suffer the strongest direct impact on employment."

More radical methods are required than are currently being pursued. "It is urgent that governments, industrial leaders and the unions should, as a matter of common self-interest, combine to study more deeply the employment and other social consequences of the new information technologies," King said.

"This is both with a view to suggesting contingency measures, as well as longer term and more fundamental approaches to changes in society, which will enable the new technologies to be smoothly absorbed for their economic advantages and to permit beneficial societal evolution."

Meanwhile, the world is facing an unprecedented increase in population. In the developing countries, the structure of that increase is such that as things stand, those countries will have to find about a billion new jobs before the year 2000.

"The fundamental question," King said, "is whether governments with the support of informed public opinion will be capable of using the new opportunities of information technology, deliberately and consciously, to shape a better society, rather than passively to attempt mere adjustment post facto to its consequences, as a matter of expediency."

Malik is a free-lance computer journalist based in London.

UNITED STATES
BANKRUPTCY COURT
SOUTHERN DISTRICT OF
NEW YORK

In re

MYRON S. GOODMAN,

Debtor.

81-B-10681 (BRL)

In re

MORDECAI WEISSMAN,

Debtor.

81-B-10675 (BRL)

NOTICE OF ENTRY OF ORDERS REQUIRING CREDITORS TO FILE PROOFS OF CLAIM

TO ALL PERSONS ASSERTING A CLAIM AGAINST MYRON S. GOODMAN OR MORDECAI WEISSMAN ARISING PRIOR TO MARCH 27, 1981

PLEASE TAKE NOTICE, that the United States Bankruptcy Court for the Southern District of New York has entered orders requiring all persons who assert a claim against Myron S. Goodman or Mordecai Weissman arising prior to March 27, 1981, whether such claim is fixed, liquidated, unliquidated, contingent or disputed, to file a proof of claim in accordance with the instructions set forth below on or before MARCH 30, 1982.

Exceptions: Persons who assert claims solely as co-debtors, co-sureties or guarantors, must file a proof of claim as required herein on or before April 30, 1982. Persons who assert claims solely by reason of the recovery by the estate of Myron S. Goodman or of Mordecai Weissman of money or property or the rejection by such estate of an executory contract or unexpired lease shall file a proof of claim in accordance with the Court's orders within 30 days of the recovery of the money or property by the estate or the rejection by the estate of the executory contract or lease

A creditor may, for cause shown, apply to the Court prior to the expiration of the bar date for an order extending the bar date as to such creditor. Any such application must be on three days prior written notice to the attorneys for the trustee of such estate and Zalkin, Rodin & Goodman, 750 Third Avenue, New York, New York 10017, attorneys for James F. Hanrett, as Trustee of O.P.M. Leasing Services, Inc.

ALL PERSONS WHO FAIL TO FILE A PROOF OF CLAIM IN ACCORDANCE WITH THE COURT'S ORDERS SHALL BE FOREVER BARRED FROM ASSERTING A CLAIM AGAINST SUCH ESTATE.

Proofs of claim should be filed in conformity with Official Form 15 or the Bankruptcy Rules of Procedure with respect to Goodman with Daniel McCoffey, c/o Garrity, Connolly, Lewis, Lowry & Grimes, 605 Third Avenue, New York, New York 10158 and with respect to Weissman with Albert F. Reisman, Otterbourg, Steindler, Houston & Rosen, P.C., 230 Park Avenue, New York, New York 10017 (not with the Clerk of the Court).

Further information may be had from the respective attorneys for the Trustees of the estates of Myron S. Goodman and Mordecai Weissman listed below

Dated: New York, New York
January 11, 1982

BY ORDER OF THE COURT
BURTON R. LIFLAND
UNITED STATES BANKRUPTCY
JUDGE

GARRITY, CONNOLLY, LEWIS, LOWRY & GRIMES
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605 Third Avenue
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(212) 687-0090

OTTERBOURG, STEINDLER, HOUSTON & ROSEN, P.C.
Attorneys for Albert F. Reisman
Trustee of the Estate of
Mordecai Weissman
230 Park Avenue
New York, New York 10017
(212) 661-9100

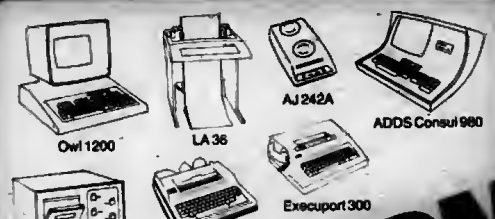
Afcet Symposium In Paris March 16

PARIS — A symposium sponsored by the Association Francaise pour la Cybernetique Economique et Technique (Afcet) will be held at the Conservatoire National des Arts and Metiers here on March 16-18.

The symposium, "Mathematics for Computing," will include papers from researchers on their studies and conferences featuring lecturers from around the world.

Price of the conference is 1,200 francs for present members of Afcet, 1,315 francs for new members with preferential registration including Afcet membership fee for 1982 and 950 francs for authors.

More information on conference fees is available from Afcet, 156 Blvd. Pereire, F-75017, Paris, France.



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Asis to Meet May 5-7 On Security

WASHINGTON, D.C. — A three-day conference on computer security issues will be held May 5-7 at the Grand Hotel in Anaheim, Calif. The conference is being sponsored by the American Society for Industrial Security (Asis).

The conference will include discussions of computer fraud, establishment of security programs, application and system software controls, contingency planning and establishment of personal security programs.

The cost of the conference is $295 for Asis members and $375 for nonmembers. Fees do not include hotel accommodations. There is an additional fee of $14 per person, per function for spouses/guests who attend the Asis-sponsored receptions.

Asis' Education & Seminar Programs Department is located at Suite 651, 2000 K St. N.W., Washington, D.C. 20006.

Study Examines Bell Settlement

NORWALK, Conn. — International Resource Development, Inc. (IRD) has completed an analysis of the telecommunications market in the wake of the AT&T settlement.

The 270-page report contains 22 sections that include details of the settlement, home telecommunications services, local-carrier networks, carrier switching equipment and local-area networks.

The report costs $1,285 from IRD, 30 High St., Norwalk, Conn. 06851.

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Computer Law Institute Slated May 20-21 in L.A.

LOS ANGELES — The third annual Computer Law Institute, sponsored by the University of Southern California Law Center, will offer an in-depth program on antitrust, proprietary rights and contractual issues confronting the computer industry when it is held May 20-21 at the Los Angeles Bonaventure Hotel.

The first day of the institute will emphasize antitrust issues, fair trade practices and proprietary rights in the development, sale and distribution of computer products in the U.S. and abroad. Trade secrets and copyrights in software, the international distribution of computer products, mass distribution problems, licensing of software, employer and employee rights to inventions and antitrust and fair trade practices in distribution and marketing will also be discussed.

The second day of the program will focus on contracts for the procurement and distribution of computer products and services.

Practical applications of the 1981 Tax Act, research and development tax partnerships and planning for and resolving disputes will also be addressed. Admission may be reserved for either or both days of the institute. Tuition for the institute is $135 for one day if paid on or before May 7 and $165 thereafter. Tuition for two days is $225 if paid on or before May 7 and $255 thereafter.

Further information is available from Ami Silverman, USC Law Center, University Park, Los Angeles, Calif. 90007.

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Catalog Lists Ansi Standards In Range of Technical Fields

NEW YORK — The American National Standards 1982 catalog is now available from the American National Standards Institute.

The catalog lists all current Ansi-approved standards that deal with dimensions, ratings, terminology, symbols, test methods, performance and safety requirements for materials, equipment, components and products in a wide range of technical fields.

Included among the products are acoustical, construction, electrical, electronic, heating, air-conditioning, refrigeration, image technology, information systems, mechanical, measurement and automatic control, medical devices, nuclear, physical distribution, safety and health.

The catalog has two sections. One lists titles of standards under alphabetically arranged headings, with designation, price, and applicable discount information included; the other section offers a compilation of the designations of all standards listed.

Included in the 1982 edition is a four-page listing of subject headings. The catalog and any supplements are free to Ansi members and libraries serving the general public. Price is $8.50 for nonmembers. More information is available from the American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

Prize of $25,000 Offered Over Twin Prime Pairs

WAYNE, N.J. — A $25,000 prize will be given by Worldwide Computer Services, Inc. (WCS) to the first person to prove or disprove the twin prime conjecture of "there are an infinite number of twin prime pairs."

The following conditions must be met to qualify for the prize:

- Proof must be published in an accredited periodic mathematical journal that has been publishing continuously in the U.S. since 1961. Proof must be published in English, and WCS reserves the right to specify which journals are acceptable.
- A copy of the publication with the proof must be delivered by certified mail to Twin Primes, Worldwide Computer Services, Inc., 1581 Rt. 23, Wayne, N.J. 07470.
- Proof must stand for one year, unrefuted, following the date of delivery of the publication to WCS.
- If proof survives as specified above, the successful candidate will receive a check for $25,000 at a special award ceremony (time and place to be announced).
- The prize offer expires March 31, 1985. The company may then, at its sole discretion, elect to renew the prize offer, but is under no obligation to do so.

All questions regarding the determination of who succeeds first are to be resolved solely by WCS.

If more than one correct proof occurs at the same time and satisfies the first three conditions, the prize will be split equally among the successful candidates, according to the company.

Additional information on the prize is available from Gene Primoff, vice-president, Worldwide Computer Services.

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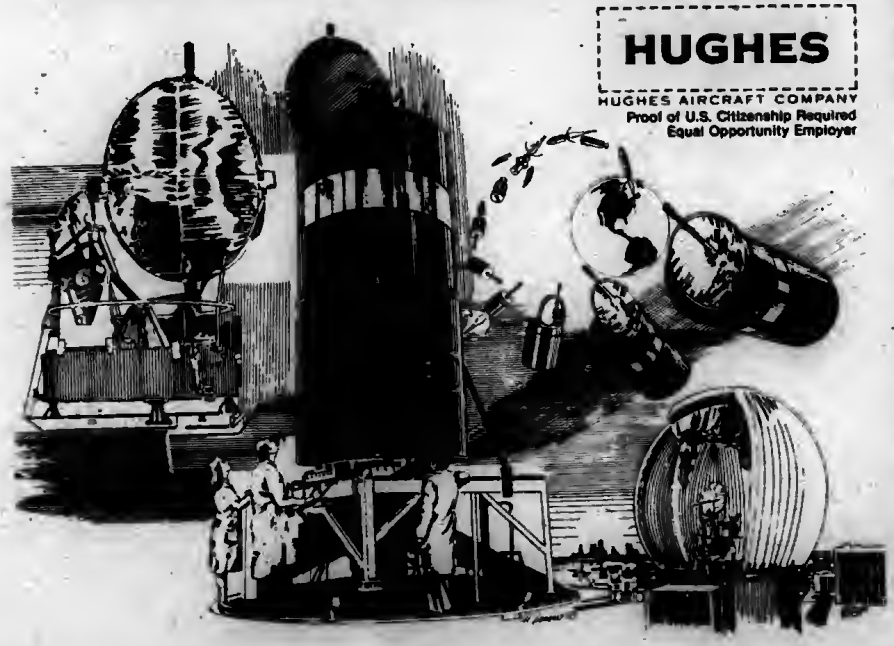

Rice Receives IEEE Award At Compcon

SAN FRANCISCO — The 1982 W. Wallace McDowell Award has gone to Rex Rice, a systems consultant known for his workshops and tutorials on very large-scale integration design and supporting technologies.

The award was presented during the opening ceremonies at the Institute of Electrical and Electronics Engineers (IEEE) Compcon Spring Conference held here last week.

The prize consists of a certificate and $1,000 in cash and is presented annually by the IEEE Computer Society to an individual whose professional work has been outstanding in concepts, technology, programming, education or management in the computer field, according to a spokesman.

Detailed DP Career

Rice began his career in the aircraft industry, where he worked on tool design and stress analysis of tapered wings, gaining exposure to scientific digital computer applications.

In 1955, he joined IBM, where he participated in the development of IBM's first fully transistorized digital calculator, the 608, and later became project manager of a precursor of the IBM 7070 system.

Rice also worked for Fairchild Instrument Corp., where he was responsible for several major developments, including the high-level computer language Symbol, as well as enhanced large-scale integration memory yields.

In addition to pursuing a career in engineering and management, Rice has served on the IEEE Computer Society's Board of Governors, chaired the Computer Magazine Advisory Board and founded the Compcon conferences, according to the spokesman.

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System Gives Bell Researchers Right Numbers

By Lois Paul
CW Staff

SAN FRANCISCO — Nontechnical surveyors at AT&T's Long Lines Division are analyzing survey data with an information storage and statistical system that incorporates SAS Institute, Inc.'e statistical analysis system (SAS) and Mathematica, Inc.'e Ramis data base management system.

The Business Customer Analysis System (Bcas) is an interactive information storage and statistical analysis system designed for use by people who not only know nothing about SAS, but who also are not familiar with the data they will be using, Arthur Bocian of AT&T explained at the SAS users conference here recently.

Developed to help the users see what is available, the Bcas system is comprised of two parts. The first stores information about the data that is in the system, Bocian continued. It provides on-line helps that guide users so they can learn what data is evailable, when it was collected, what variables exist and how the data is coded. Ramis is used in this part to store information about the data while it is stored in SAS data sets.

Bocian said the second part of Bcas prompts the users in the use of SAS-generated graphics to analyze the data. Bcas asks users for the information necessary to perform various types of analyses. The functions evailable in the system include terminal and high-resolution graphics, correlation analysis, frequency tables, scatter plots, linear regression and simple statistics.

Users do not need any Ramis or SAS training, he explained, because the Bcas system prompts for all information in a user-friendly manner and gives users a chance to correct any invalid responses.

According to Bocian, the initial surveys that were analyzed using the Bcas system included more than 1,200 variables that were stored in Ramis files. These variables were divided into 20 categories and were subcategorized. The name of the variable, its description and the type of variable is stored in Ramis.

For e user employing Bcas to locate the information he is interested in, there are prompts et the survey, category and subcategory levels, Bocian explained. Users also can search for key words, such as all variables including the word "revenue."

The output file of the Bcas system includes the names of the survey and variables and their types, and is used for the enalysis portion of the system. Bcas essentially prompts users to generate SAS code, Bocian said.

Among the features included in the analysis portion of Bcas is the renaming of variables so they will be more meaningful for users and editing capabilities so users can make changes to the output they are generating. Users also have the ability to provide their own title for the reports.

More sophisticated users can bypass the prompts included in the Bcas system, Bocian said.

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Analysis Tools Help KLM Keep Duty Rosters for Shift Workers

By Lois Paul
CW Staff

SAN FRANCISCO — How do you maintain and update e duty roster for 1,500 shift workers at an airport, particularly when there are continual requests for leave and assignment changes?

KLM Royal Dutch Airlines' answer was an eutomated system that uses SAS Institute's Statistical Analysis System (SAS) and Full Screen Product (SAS/FSP).

Erik W. Tilanus of KLM Royal Dutch Airlines explained et the recent SAS users conference here that air transport requires e lot of shift work for passenger, baggage and ramp handling. Unlike factory shift work, airport work loads vary according to flight schedules et different times of the day.

Matching the amount of staff available et any moment to the work load at the time is e must, Tilanus said, as insufficient staffing results in flight delays and overstaffing wastes money. This matching is done by assigning staff to several different rosters, with different shift times.

Tilanus explained that maintenance of the roster is e complex and labor-intensive task. The roster basically consists of e survey of the shifts of all of the people in a department during e given week.

The next step in the process is the duty roster, which assigns names to each line, he continued. Each week, all the names are shifted up one line. Once people receive their assignments, they inevitably need to change them for holidays. These leave requests and shift changes require e check of the available manpower against the minimum requirements as imposed by the flight schedules.

A study of the feasibility of automating duty roster maintenance was completed in 80 man-days, yielding e 70-page report. "This was a good start, especially when you hear the decision to develop the system was made Aug. 15 and you have to develop the system and have it operational by Sept. 1," Tilanus said.

The system, named Pronto, was intended to be a terminal-oriented, on-line duty roster maintenance application. Because of time constraints (Pronto was supposed to be ready by November 1981), it was impossible to develop an IBM IMS-based system, he said. It was decided, therefore, to develop e prototype approach, using IBM's TSO/SPF-II (structured programming facility) for terminal-computer communications and SAS for the application development and file management.

The user who logs onto Pronto receives e selection menu on his terminal screen, which provides the 12 functions that are eveilable. After specifying the required function, the system provides another TSO/SPF data frame for entering the parameters for the selected function.

There is no permanent file for the duty roster, Tilanus explained. The weekly duty roster is constructed each time it is requested. The permanent SAS files are two personnel files, one sorted by name and one by roster sequence number; e roster file thet contains the roster pattern in coded form; e roster format file, which translates the shift code into actual shift start and finish times; and a mutation file, which contains the changes.

Bank's Software Selection Aided by Users' Input

BALTIMORE — The quality of the vendor's user group was a key factor in the Maryland National Bank's decision to purchase a new general ledger system.

As a matter of policy, the bank had decided to take an active part in the vendor's users group in order to have some say in the future development of whatever system it selected, according to Rick Bailey, assistant vice-president at Maryland National. The bank wanted to establish contact with a group that would allow its DP staff to meet its counterparts in similar organizations.

With assets of $3.6 billion and 158 branch offices, Maryland National did not have either the time or the financial resources to develop another financial system from scratch. Prior to 1975, when it decided to acquire a software package, the bank had developed several of its own systems, including general ledger, direct expense, profit plan data collection, balance sheet and income and indirect expense.

Decision to Replace System

The bank decided to replace the systems because of the difficulty of controlling multiple systems and because accounting- and customer-oriented systems competed for priority in the DP department's schedule, Bailey said.

The evaluation team started a detailed search for packages at the end of 1976. The team included two people from accounting, one of which was Bailey, and two people from the DP department. Evaluation of specific software packages involved telephone calls, visits to other banks and documentation reviews.

"I don't think we could have made a decision without questioning both users suggested by the vendor and users we established contact with on our own," Bailey recalled.

After narrowing down the field to two contenders, the bank selected Management Science America, Inc.'s (MSA) General Ledger/Fics System. The other package under final consideration was University Computing Co.'s Financial Control System, Bailey said.

On the whole, MSA's customers were more representative of the bank's organization and size, and the package was judged to be more flexible, Bailey said, who has recently served as president of MSA's user group Future. Bailey also liked the idea of an independent users group rather than one run by the vendor.

Specifically, the system offered more flexibility in custom reporting, had more user-oriented documentation and had a more flexible cost allocation module, Bailey reported.

When Maryland National implemented General Ledger/Fics in 1978, about 10 interfaces needed conversions. "We were also in the process of converting from a Burroughs Corp. 6700 to an IBM 370," Bailey recalled. Besides an IBM 370/158, the bank uses an Amdahl Corp. 470V/6 and 470V/8.

The cost allocation module was scheduled for implementation in February and to go live by May. However, bank personnel felt that some improvements to cost allocation, which had to be supported with maintenance to cost files and custom reports, should also be implemented. Therefore, an additional two months were required to implement this module. These changes involved breaking cost centers into finer distribution units and then allocating the costs out from the individual units to get accurate distribution.

"Our customization is done outside the package as additional codes accessed for specific jobs. The changes are minor compared to the total package," Bailey explained.

Report Lists Data Centers Serving Thrift Institutions

CHICAGO — The Association of Information Managers for Savings Institutions (AIM) has released its 1981 Thrift Institution Automation Survey. The survey is a comprehensive listing of nearly 600 data centers that provide on-line deposit and lending services to thrift institutions; it includes in-house data centers as well as independent service bureaus.

Included in the survey for each data center are address and principal contact; numbers of accounts and associations serviced; staffing by job categories; hardware by vendor, type and quantity; operating software by name and supplier.

The survey is useful, AIM said, for the service center manager with a specific problem who wants to contact another center with similar hardware or software. Arthur Andersen and Co. assisted AIM in compiling and analyzing the data.

The 1981 survey costs $50 for members of AIM and the Financial Managers Society (additional copies $25 each). It costs $200 for nonmembers (additional copies $75 each).

AIM is based in Suite 2221, 111 E. Wacker Drive, Chicago, Illinois 60601.

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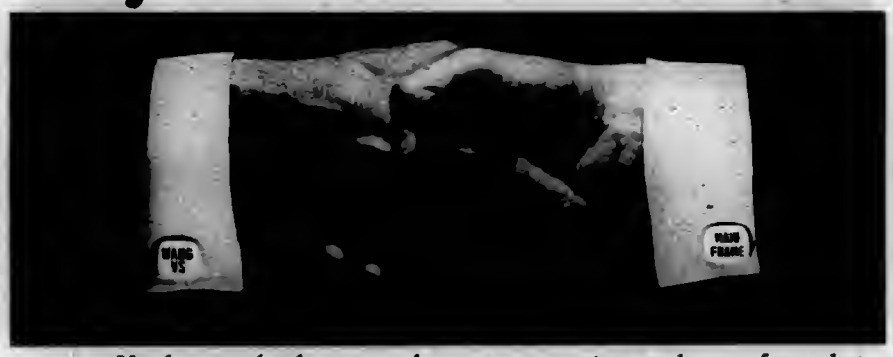

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Calendar

March 31, Chicago — Software Decision Symposium. Contact: Merlyn Corp., 6075 Roswell Road, Atlanta, Ga. 30328.

March 31-April 1, Chicago — Effective Data Base Management. Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 31-April 2, Portland, Ore. — Local Area Networks. Contact: American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

March 31-April 2, Boston — Data Communications Systems: A Short Course. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

April 1, Washington, D.C. — Software Reliability. Contact: Software Enterprises Corp., 2239 Townsgate Road, Westlake Village, Calif. 91361.

April 1, San Diego — Computer Management Group XII International Conference on Computer Performance Evaluation. Contact: Computer Management Group XII, P.O. Box 26063, Phoenix, Ariz. 85068.

April 1-2, Scottsdale, Ariz. — The 11th Annual International Computer Program Million Dollar Awards Ceremony and Executives' Conference. Contact: International Computer Program, Inc., 900 Keystone Crossing, Indianapolis, Ind. 46240.

April 1-2, Chicago — Developing Documentation. Contact: Carnegie Press, Center for Documentation Resources, 100 Kings Road, Madison, N.J. 07940.

April 1-2, New York — MC1 — Audit and Security of Data Centers. Contact: Management Advisory Services and Publications, P.O. Box 151, 44 Washington St., Wellesley Hills, Ma. 02181.

April 1-2, Washington, D.C. — Data Communications: Advanced Concepts and Systems. Contact: Seminar Department, Datapro Research, 1805 Underwood Blvd., Delran, N.J. 08075.

April 2-4, New York — The Eighty/Apple Computer Show. Contact: Ken Gordon, President, Kengore Corp., 3001 Rt. 27, Franklin Park, N.J. 08823.

April 5-6, Boston — Vsam for Cobol Programmers. Contact: Steve Comstock, 256A S. Monaco, Denver, Colo. 80224.

April 5-6, New York — IBM's Systems Network Architecture. Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 5-6, Chicago — Data Dictionary/Directory Systems: Evaluation and Selection. Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 5-6, Boston — Data Communications: Advanced Concepts and Systems. Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

April 5-6, Orlando, Fla. — Successful Software Management. Contact: Data Processing Management Association, Suite 1016, W. Century Blvd., P.O. Box 91295, Los Angeles, Calif. 90009.

April 5-6, Orlando, Fla. — Successful Software Management. Contact: The Education Foundation of the Data Processing Management Association, P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

April 5-6, Tampa, Fla. — Developing Documentation. Contact: Carnegie Press, Center for Documentation Resources, 100 Kings Road, Madison, N.J. 07940.

April 5-7, Washington, D.C. — Fundamentals of Data Communications. Contact: The George Washington University, School of Engineering and Applied Science, Washington, D.C. 20052.

April 5-7, Washington, D.C. — Data Dictionaries: Concepts, Contents and Uses. Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

April 5-7, New York — Fundamentals of Data Processing for the Non-Data-Processing Executive. Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

April 5-7, San Francisco — AMA's 53rd Annual Human Resources Conference. Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

April 5-7, San Francisco — The Human Connection. Contact: American Federation of Information Processing Societies, Inc., 1815 N. Lynn St., Arlington, Va. 22209.

April 5-8, Philadelphia — DOS/VSE Vsam and Vsam Course for Cobol Programmers. Contact: Software Information Services, P.O. Box 4132, Bellevue, Wash. 98009.

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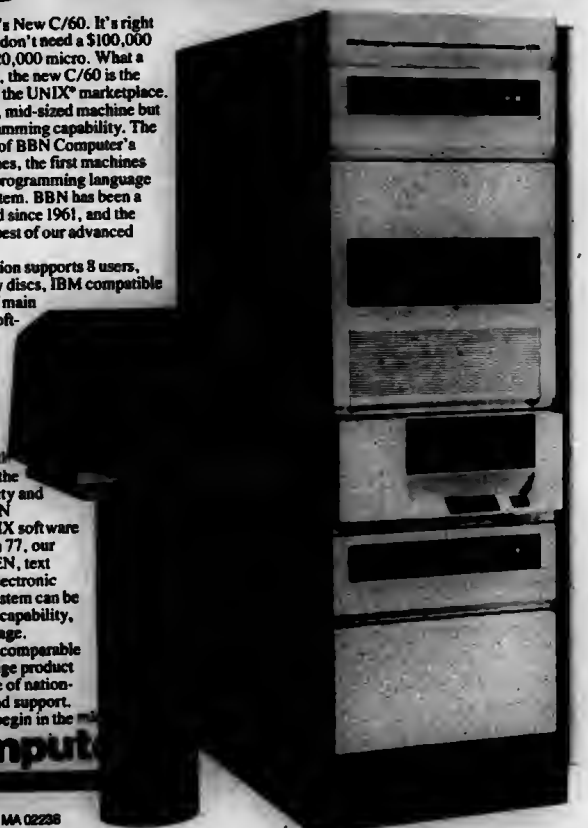

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An Evaluation of DSS Packages

By Warren G. Briggs

Like MIS, the label DSS is beginning to mean so much to so many that it may soon lose its meaning. Nonetheless, it represents a relatively new way of thinking about management and computers. In most contexts, a decision support system is designed to support high-level managers in making important very unstructured decisions.

Typical applications include comparison of long range investment options, evaluation of new product or new process commitments, analysis of acquisitions or [illegible] and antitrust

IN DEPTH

of economic changes. Unlike the results of earlier data processing applications of computers, DSS payoffs are hard to evaluate, since they enhance and expedite top management's intuition and judgment rather than reduce clerical costs or automate routine decisions.

Several important trends combine to encourage DSS applications. Well-known is the persistent reduction of computing costs, which continue to drop by one-half each two or three years. Relevant data on both internal management operations and the external environment is becoming more accessible and reliable. Increasing top-management sophistication and competitive pressures force more analytic support of executive intuition. That earlier generation of MBAs who complained of the analytic communications gap are now moving into the top spots. Finally, recent advances in the competitive software marketplace provide a wide selection of tools for more efficient implementation of DSS.

As with any new product market, challenges and confusion accompany the opportunities for choice among rapidly developing offerings. This article briefly reviews the range of features and trade-offs encountered and suggests some guidelines for entering this marketplace.

Wide Spectrum

There is no clear definition by which one can determine what is or is not a DSS package or DSS application. By one count, there are 70 different software products claiming a piece of this market. Definition problems are evidenced by the impressive and useful decision support applications programmed in APL, Basic or other procedural languages and involving none of these new packages. Nonetheless, a couple of dozen major software products are recognized as primarily addressing DSS builders or users.

The spectrum of these products ranges widely over the extreme from Visicalc (by Personal Software, Inc.), of which about 200,000 copies have been sold for $200 each, to Express (of Management Decision Systems Corp.), of which about 20 copies have sold for more than $200,000 each. The ubiquitous Visicalc works on the personal microcomputers (Apple Computer's Apple II, Radio Shack's TRS-80 and so on), while the full capabilities of Express require a substantial mainframe.

Obviously, potential users must recognize where along this spectrum their needs might be satisfied. One constraint is, of course, the computer resources, yet this should not override considerations of where early successful applications might lead. Several packages more powerful than Visicalc use microcomputers, and several of the suppliers of larger packages are developing subsets to operate on the micros. The DSS-F package distributed by Addison-Wesley Publishing Co. (at $1,500 per copy) apparently has sold several hundred microcomputers — supporting the inevitable trend that hardware is, along with documentation and training, an incidental inclusion with a software package.

Most large DSS packages are available through time-sharing networks, and this provides an obviously attractive low-risk way to try several products. In fact, the very large packages, like Express, Xsim (of Chase Econometrics/Interactive Data Corp.), FCS (of Evaluation and Planning Systems) and EIS (of Boeing Computer Services) are used largely through time-sharing. This mode is especially appropriate where access to huge external data files for stock prices, economic time series, census files and financial statements is involved.

Functions, Features.

Several functions and features characterize most DSS applications and software packages. Certain of these involve trade-offs that potential users must consider in choosing among alternative packages. More organizations are justifying several DSS packages to serve disparate requirements — just as Cobol, Fortran and APL coexist on many large computers. Inevitably, vendors are inclined to imply their individual products serve all needs (like PL/I); it's the old story of "caveat emptor."

• **Model Building:** The obvious purpose of any DSS package is to expedite development, testing and modification of some descriptive model. Most models show the financial impact over several time periods of alternative decisions, assumptions and uncertain events. For example, the impact on earnings per share (EPS) or return-on-investment (ROI) of alternative manufacturing policies would be important supporting evidence for a strategic choice.

Obviously there are critical non-quantitative aspects to any strategic plan; even the most comprehensive computer-based model can only "support" rather than "make" strategic decisions. Hence, there is a trade-off between simplicity, which retains user insight into assumptions, and complexity, which can relax some constraining assumptions.

The computational framework of most models is a table of rows and columns, sometimes extending to three or four dimensions. For example, a simple application may involve rows as the revenue and expense items of a profit-and-loss statement and columns as successive time periods. The third and fourth dimensions of an extended profit-and-loss statement could reflect several product lines and several geographic regions for a diversified enterprise. Access to and analysis of this so-called data cube underlies most DSS applications.

Sorting Out the Options

The software marketplace is becoming crowded with vendors extolling their relative virtues. This activity brings opportunities as well as hazards. One way to gain an overview of the available products, as well as share experiences of other users, is through participation in meetings and conferences that address the subject of evaluating DSS software.

Several such meetings are held across the country each year, sponsored by the North American Society for Corporate Planning, the Society for Management Information Systems and other groups. The Boston chapters of those professional groups, plus several others, are helping sponsor a conference on DSS on March 17. The keynote speakers, Peter Keen and Michael Scott Morton, are authors of *Decision Support Systems — An Organizational Perspective* [Addison-Wesley, 1978]. More information on the meeting is available from DSS Conference, 215 First St., Cambridge, Mass. 02142 (617) 547-5061.

'There is no clear definition by which one can determine what is or is not a DSS package or DSS application. By one count, there are 70 different software products claiming a piece of this market.'

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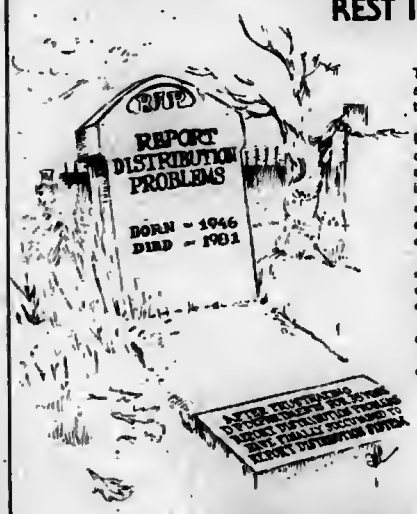

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Model development involves specifying the relationships among these rows and columns. Thus, most simplistically, a relationship can be defined as:

Sales = 1.05 * Previous sales
Cost of Sales = 0.84 * Sales

• **Procedural or Nonprocedural; Interpreter or Compiler:** An obvious difference among packages is whether statements defining the model are compiled in the procedural sequence written or whether each line is interpreted nonprocedurally and variables calculated according to the implied logic. It is more convenient and flexible to create a model nonprocedurally by simply entering statements in any sequence. These systems generally interpret (translate to computer code) each line as entered and thus provide immediate error diagnostics.

While responsive to error checks and statement changes, the interpretive packages sacrifice the computational efficiency of reusing a compiled code. This may be important for large models and those that are rerun frequently. IFPS (from Execucom Systems Corp.) and Cuffs (from Cuffs Planning & Models, Ltd.) are widely used interpretive nonprocedural packages designed to favor rapid, flexible response with modest-sized models subject to many revisions and modifications. Large packages like Express, FCS, EIS and Xsim are procedural compilers that provide greater power and computer efficiency with less simplicity and flexibility for smaller, less-structured models.

• **"What If" and Incremented Assumptions:** Perhaps the single most useful feature of DSS models is the modification of data and relationships to show the implications of one or several changes. Thus, continuing the earlier illustration, a model developed with any of the DSS packages could recompute the relevant measures (EPS or ROI) if sales grew periodically at 6% or 8% instead of 5% and/or if cost of goods were 0.82 or 0.80 instead of 0.85 times sales revenue.

An obvious extension of this feature is to increment over a range of possible values for certain key assumptions. This procedure would automatically repeat the planning calculations, for example, for sales growth ranging from 0% through 20% in increments of two percentage points.

• **Backward Iteration:** Most larger DSS packages include a feature whereby the sensitivity of a key "what-if" question on some critical measure is directly calculated. In this example, the real question might be, "At what rate must sales grow for EPS to double within five years?" or "What is the highest cost of goods as a fraction of sales for ROI to be at least 20%?" A quick answer to such questions can show top management whether the desired objectives are within the realm of reasonable assumptions. Such answers are readily displayed by most packages.

• **Risk Analysis:** A logical extension of these "what-if" and iteration functions is the systematic display of risk, using the function of Monte Carlo simulation of uncertainty. Named for the famous casino, this procedure draws random samples from specified probability distributions of key unknowns, then repetitively calculates, and displays the relative frequency of, some specified critical measure.

For example, suppose the estimated sales growth rate mentioned above could be described by a probability distribution centered at 8%, with a minimum of 0% and maximum of 20%. Likewise, the cost-of-goods fraction might be described as centering near 0.82 and ranging from 0.75 to 0.90. Various forms of probability distributions including triangular, normal, beta and others are used.

This preprogrammed function samples values from the probability distributions and calculates perhaps several hundred resulting values for the specified measure of merit, like the ROI or EPS. The resulting distribution of such values displays for top management the relative likelihood of achieving various levels.

• **Statistical Analysis:** Most DSS packages include some routines for calculating statistical relationships from internal historical and/or exter-

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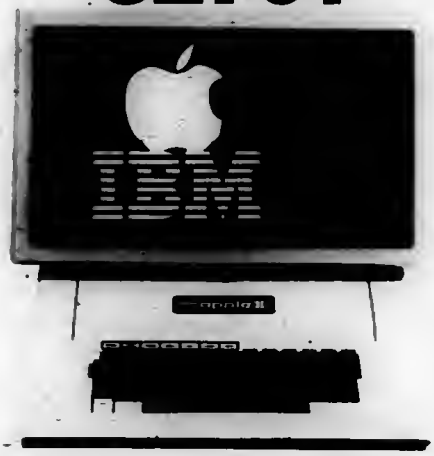

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IN DEPTH

nal data. For example, if several prior periods' profit-and-loss statements were available, the sales growth rate or the cost-of-goods fraction could be statistically estimated. In addition to "best estimates," these routines provide other measures like trends, seasonality and variability, as well as measures of confidence in the estimates. These routines are especially useful for drawing inferences from large external data files such as those accessible through Xsim, EIS and others.

Users must keep in mind that however sophisticated the analysis of historical data and relationships appears, one must assume these relationships will hold into the future. Often the purpose of strategic planning is to change the future significantly, thus obsoleting the historical data. All statistical projections presume some degree of continuity, the absence of which has precipitated some notably poor forecasts.

• **Financial Functions:** All DSS packages include preprogrammed functions for commonly used financial calculations. Among them are various depreciation methods, mortgage payouts, internal rate of return and net present value. Some packages include corporate tax rates and rules to expedite tax consideration of investment alternatives.

• **Graphics:** An important aspect of supporting top management decision-making is providing analyses in highly visible formats, responsive to the cognitive preference of each client. An important range of graphics capability exists among packages. The large packages and some smaller packages, like DSS-F for microcomputers, provide for interface with sophisticated pen-and-ink plotters. Most packages provide some character plotting capability for printer or CRT output terminals, which may be adequate for many applications.

The increasing availability of high-resolution multicolor CRT displays and less-expensive plotters, combined with the rising expectations of top executives for responsive and visual displays, suggest graphics capabilities of these packages will continue to improve.

• **Computer Compatibility:** As mentioned earlier, DSS packages are available for hardware ranging from personal microprocessors to multimegabyte mainframes. In addition, most larger packages are available through time-sharing services. Some DSS software vendors, like Management Decision Systems, Boeing Computer Services and Chase/Interactive Data Corp. are themselves time-sharing vendors.

Most DSS packages are written in a source language, like Fortran, for which compilers are available on most computers. While the minimum-size computer primary and secondary memory and other constraints are easily specified, it is quite difficult to describe the computer resources needed to support DSS applications.

The consulting firm Real Decisions, Inc. prepares benchmark comparisons for many DSS packages against a standard scenario. However, quite unlike such applications as payroll or billing, the DSS scenario is very hard to specify. Furthermore, and especially as hardware costs decline, the more critical performance measure is how effectively top management decision-making is supported — a most subtle yet highly valued measure.

In considering resource requirements, the potential user must at least attempt to describe the likely range of users and the direction of development. For example, for an MBA introductory finance course using DSS, there are a great many relatively unsophisticated users who will develop fairly simple models, independent of each other and of external data sources, with many changes and not much repetitive running.

This application suggests a very easy-to-enter, well-documented, nonprocedural interpretive package such as IFPS. If enough microcomputers (Apple IIs or TRS-80s) were available, Visicalc or Supercalc would likely be adequate. On the other hand, DSS applications that could grow into corporatewide consolidations, draw upon extensive internal and external files and provide elaborate graphics output would better justify the higher purchase, train-

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ing and computer costs of the larger packages.

• **Data Bases, External Files and Consolidations:** As mentioned earlier, DSS packages differ significantly in their ability to access and manipulate data bases and external files. Some larger packages incorporate sophisticated data base capabilities — but, of course, not without costs in complexity and computational resources. At the same time, some data base management systems developed for data processing applications have been extended to provide DSS features.

In choosing a DSS package, it is important to anticipate future requirements for these features. Some users have become disappointed when isolated simple-model applications have grown such that access to large data files and consolidation of several models across corporate segments eventually have become desirable. Conversion to more powerful packages is, of course, costly and causes delay.

Much more so than with other computer applications, successful DSS supply begets demands. Anecdotes abound in which top executive enthusiasm either has never developed or has developed beyond expectation for DSS capability. Steve Alter's *Decision Support Systems: Current Practice* and *Continuing Challenges* (Addison-Wesley, 1980) gives many examples.

An important trade-off, mentioned earlier, is between the inexpensive, easy-to-use, low-overhead systems that are responsive to isolated, quick-and-dirty modeling tasks and systems with higher start-up costs that provide capacity for expansion, consolidations and file interfaces. Many large users are avoiding such compromises and trade-offs by using several packages — especially where small micro-based packages satisfy some needs and where time-sharing access to external files and powerful statistical packages are also needed.

About the Author

Warren G. Briggs is professor of management at the Suffolk University School of Management, Boston, where he teaches business policy and computer information systems. He is also general chairman of the March 17 conference "Evaluating Decision Support Software" (see box on Page 32).

Briggs has taught at Northeastern University, Bentley College and MIT's Sloan School of Management and has been a principal in the consulting firm Harbridge House, Inc., Boston.

Briggs is the author of more than a dozen books, pamphlets and articles, including Management Science for Decision-Making *(Harbridge House, Boston, 1972). He holds a B.S. and Ph.D. from MIT and an MBA from Harvard Business School.*

EDITORIAL

Managers and Micros

The emergence of microcomputers in large corporations is an issue that data processing executives can no longer avoid. Reason: The increasing number of computers popping up on the desks of corporate end users may put limits on the control that central DP departments exercise over an organization's information processing.

A new generation of managers may arrive with sufficient technical knowledge to employ desktop computers with major impact on the organization, but without the DP department's sanction. End-user departments can already buy desktop micros out of discretionary or general procurement funds. And the latest of these machines offer a wide range of user-friendly applications capabilities, which could reduce end-user dependence on DP specialists.

That does not mean DP specialists will necessarily decline in prestige. Certain applications of computer technology will continue to require their support, especially where important data bases are kept within central DP resources. But the proliferation of desktop computers could make mainframe operations more like a utility — such as electricity or heat — that renders a critical service most people take for granted.

If top management in a large number of U.S. companies establish formal departments for office automation, it is possible authority over processing will be split as follows: The central DP department remains in control of headquarters' mainframes, while the office automation department acquires control over various aspects of desktop computing. The latter, after all, is simply one form of office automation.

This would lead to two classes of DP professionals: the headquarters' mainframe specialists, relatively less involved with end users' day-to-day problems, and the office automation (desktop computer) specialists, who typically interact with end users on virtually a daily basis. The office automation specialists would basically act as in-house counselors and consultants, helping ordinary white-collar people to apply technology to ad hoc and transitory problems.

Since many office automation products and services were designed for turnkey usage, transparent to the operator, desktop computers probably represent the main area in office automation where operators can exercise technical knowledge — if only by programming in the Basic they learned in high school or college.

That means the most innovative end users may form relationships with the end-user-oriented office automation class of DPers that drive toward dramatic changes in white-collar productivity — more dramatic than what comes of relations between end users and headquarters' mainframe specialists.

DATA PAST

Five Years Ago
March 7, 1977

WASHINGTON, D.C. — The Internal Revenue Service continued its battle for congressional approval of its proposed controversial Tax Administration System.

Meanwhile, the board members of the Office of Technology Assessment voted to release its report criticizing the proposed distributed processing system on grounds it could violate individuals' constitutional rights.

The system already received approval from the U.S. Treasury Department and the General Accounting Office in 1974 and 1975.

Ten Years Ago
March 1, 1972

PALO ALTO, Calif. — A Hewlett-Packard Co. interface allowed its programmable calculators to be used for applications traditionally performed by minicomputers.

The interface connected the HP 9800 series programmable calculators to the company's coupler/controllers to control instrument systems for data acquisition, process control and automatic testing.

Operation was simplified by eliminating the need for the learning of programming languages, the company said.

LETTERS

Employment Dilemma

"Learn Company Tactics!" [CW, Feb. 8] was of special interest to me since I will be graduating soon and am currently seeking employment in the DP industry.

Training and education are high on my priority list for choosing a potential employer. Unfortunately, as Jack French points out, too many managers are looking for specific hardware and software experience — presumably to minimize the cost of training — rather than looking for more important personal qualifications such as "creativity, knowledge, education, judgment and social skills."

The fact that the university I attended happened to use a Burroughs Corp. 5700 and a Honeywell, Inc. DPS 8 should have no effect on my ability to work in any environment, be it Burroughs, Honeywell, IBM, Sperry Univac or Control Data Corp.

The university's duty is not to provide specific experience on this machine or that machine to make its graduates more marketable, rather it is to convey a body of knowledge related to a discipline.

The company, on the other hand, should judge the applicant on the basis of this knowledge and then train him on their specific equipment and procedures.

Before reading French's article, I felt that my job choice was limited by my hardware experience. Now I know that any company not willing to invest its time and money to make me a long-term valuable employee is nothing more than a dead-end company.

Gordon C. Quayle
Eau Claire, Wis.

Privacy and Data Bases

In the reader commentary by Jack Bologna, "Computer Matching vs. Privacy" [CW, Feb. 8], I found an echo of my own feelings regarding personal privacy vs. government computer systems and government's need to know. I fear that the social costs and long-term effects of computer matching are not being thoroughly thought-out by Congress or by the administration.

Also, the article "GAO: Ease Access to Personal Wage Data Bases" [CW, Feb. 8] set off my "alarm system." The General Accounting Office (GAO) statement that the stopping of a $1 billion overpayment of benefits is a "compelling" societal need which "outweighs individual privacy concerns" is outrageous.

The GAO is not looking at the long-term effects of extensive access to wage information. Once the links are established, any kind of information can be shared without an individual's knowledge. If a Federal Bureau of Investigation-requested nationwide network of information on criminals has recently been squelched, then why should a similar network on law-abiding citizens (for the most part) be even seriously considered?

I appreciate your coverage of these important issues and look forward to more. It would be interesting if some of your writers could do a feature on a hypothetical "what if" the GAO and various governmental agencies had the linked data bases they want. Also, how would such systems be allowed to interact with the private sector data bases?

Computing is inextricably bound up in the future of society and the quality of life.

Such ethical and moral issues need to be thought about while far-reaching decisions are being made — not afterwards.

Susan E. Scholine
Management Information Systems Manager
Michiana Area Ceta Consortium
South Bend, Ind.

SOFTLINE /Werner L. Frank‡

Getting to Know a 'User-Friendly' System

State-of-the-art data management systems vendors are quick to promote their product as "user-friendly." The implication seems to be that this feature removes a usage barrier from the user and facilitates easy communication with the computer.

DP professionals may be able to design so-called user-friendly systems; but are end users sufficiently in the know so that they can readily use such systems intelligently? Are there not certain prerequisites that a person must have to be even a casual computer user?

As in everything else, there is no free lunch. The new and casual user of computers has more critical needs with respect to data processing than the support provided by the so-called "friendly" screens. Indeed, anyone proposing to use a computer must come armed with a certain amount of understanding and know-how concerning fundamental principles of data and data handling.

We believe that the following concepts and functions comprise part of the necessary background that will prepare an individual for his first encounter with data management systems and the computer.

The most fundamental prerequisite is the notion of a file of information or, if you like, the concept of the data base. Next is the need for an understanding of the components of a data base, including the logical aspect of the record, the concept of a field and the notion of the value or attribute of a field.

Once these data file concepts are in place, it is necessary to teach the operations of search, retrieval and reporting. Unfortunately, this implies knowing something about Boolean logic and maybe even the use of parentheses for nested relationships. It is only after the user appreciates all of these elements that he dare turn to the screen and log on for his interactive session. Even when armed with this abstract background, the user has a need for some further systems-oriented skills.

Consider, for example, as simple an expression as the calendar date, uncomplicated by anything beyond the conventional representation in common American usage. First there is the issue of input format and prompting. Shall the date on entry be allowed in free form, that is, May 3, 1980 or 5-3-80 or 5/3/80 or even 050380? The decision on input format is determined by four considerations:

- The degree to which the input process is to be facilitated and validated.
- The manner in which one wishes to store the date.
- The basis on which one might ultimately wish to perform search operations against the value of the date.
- The way the date is to appear in the output reports.

Overriding all of these factors is the degree of "user-friendliness" that should be present with respect to the data entry process itself.

In some systems, independent control is provided for each of the four specified requirements so that a decision on handling one of them need not affect the other. In other systems, the user must make some commitments and trade-offs that will affect the flexibility and usage of the system. Unfortunately, the typical user may not understand clearly how one of his decisions affects another.

The easiest choice is to select an input form that matches the desired output format. In this case, one is naturally drawn to the structure 5/3/80. The amount of data storage is, of course, affected if it is decided to incorporate the two "/"s along with the numerical quantities. Also, the decision to enhance the data with separators probably dictates that the values will be treated as character strings and not numerical quantities. Hence the input validation process may be severely limited.

Now comes the more subtle issue that relates format to processing. It is highly likely that the date will be the object of a search operation when selecting records for report generation. It may be desirable to select records on the basis of whether the date precedes or comes after a given date or if the date falls within a range. It may also be desirable to select records on the basis of the specific day, month or year of event.

For maximum flexibility, it would therefore be desirable to address each component, day, month and year individually. Does that mean that the date becomes three fields and not just one? Does the chosen data management system have the more advanced feature of subfields or overdefined fields, which permits doubling up of these requirements?

Unexpected Solution

In the event that the highly user-oriented system does not permit this flexibility, then the likely alternative for the user is the most unexpected solution. The user would enter, store, search and output the date employing the form year, month and day. Referring to our earlier example, the date 800503 would represent May 3, 1980.

With this structure, search criteria can be stated to achieve most of the selections normally associated with dates, but now the input format and output presentation will have lost esthetic value. We will have compromised the user-friendly criteria.

Now how would the typical end user have sufficient understanding to go through this analytic process in defining fields for his file and subsequently executing queries in even the most user-friendly system available?

Next we consider the problem of exception handling. We wish to maintain telephone numbers for employees of a company. Let us assume that 90% of these employees are served by one area code while the balance reside in several surrounding coded areas. Would the data management system insist on reserving 10-character (or numeric) positions even though seven would suffice for 90% of the entries?

There is no simple solution since it depends on one or more of the following factors:

- Availability of storage capacity.
- Trade-off in storage utilization vs. set up and execution ease to account for the differences.

(Continued on Page 40)

HUMAN CONNECTION /Jack Stone‡

One-Day DP Training Course Leaves One Frustrated User

This is Part 3 of a continuing series on new users learning to cope on the job.

Everyone involved with information systems knows that users — particularly user management — require extensive DP training. But what can you do with users who — quite legitimately — are just too busy to take the time?

Ira Schoen had the problem in spades. He was the management analyst in the U.S. International Communications Agency (ICA) Education and Cultural Affairs directorate (ECA) who, in late 1980, was assigned to work with the Automatic Data Processing (ADP) department and upgrade obsolete batch-oriented mainframe systems.

After only a few weeks on the job, he found a universal disenchantment with those systems developed by ECA managers and branch chiefs.

Why the Unhappiness?

Much of their unhappiness, Ira believed, was attributed to their fears of being hemmed in. Their ignorance of the technology would not permit the users to take off on their own system development pursuits, much less have intelligible communications with the DPers. The net of it was a deepening sense of frustration with not being able to control their information systems destiny.

Ira realized that systems training of ECA management was critically important, starting with himself. So he enrolled in the February 1981 session of the five-day computer literacy course that I regularly teach for ICA foreign service officers and headquarters managers. The class covers all the major DP areas, emphasizing hands-on demonstrations on the Wang Laboratories, Inc. OIS equipment that is used throughout the agency.

In his March 1981 letter to the ICA training officer for DP, Ira stated that he "found the computer literacy course well suited to the general audience for which it is intended.

"However, it is my opinion that such a course, due to its length and depth, would not suit the needs of many ECA managers at the present time . . .

"I would like to propose an intensive two half-day course, based upon computer literacy, which would emphasize computer systems concepts with some hands-on exposure. Initially, I would like the course to start with the very basics, advancing as far as possible (without being too technical) by the close of the second half-day."

Ira's position was based on the simple fact that the coordination of international visits, a program tied into U.S. foreign affairs, requires the close attention of ECA managers and does not permit the luxury of sending a manager off to computer school for five working days.

But the ADP senior analyst assigned to work with ECA on its office automation projects took vigorous exception. In his April letter to the ICA training officer, he said: "Our concern with ECA's proposed course is that participants will think they have attended full-scale introductory training.

"As you know, a good introductory course will let participants identify basic concepts and discuss their automation needs intelligently. Also, it will give participants a 'gut-level' feel for programming and operations.

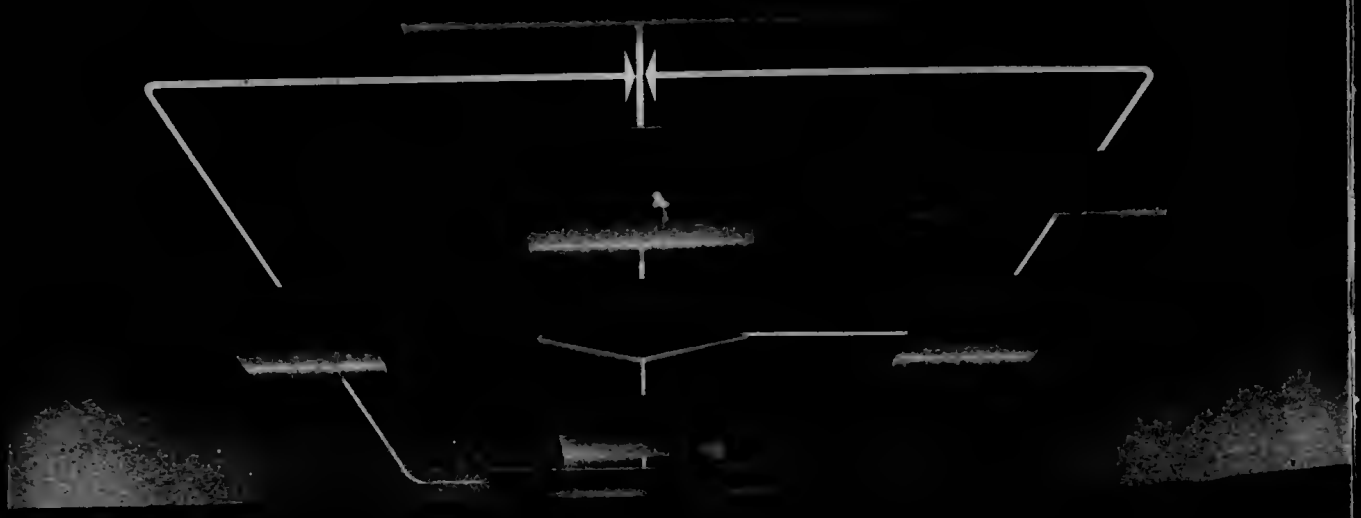
"We believe that mid-level managers and supervisors *must* have this background if they are going to deal with computer professionals adequately and present their needs in a coherent fashion. An eight-hour briefing cannot, in our opinion, accomplish these goals . . ."

Ira felt quite put upon that the ADP analyst would oppose such an effort. He was determined to get the training program going and make it a success — with or without the analyst's support.

So in April 1981, he responded with a memo to the training officer, which said: ". . . ECA has not even reached the point of naming our proposed course. When we get to the naming process, please be assured that its title will assuredly reflect the course's intent . . . The division-chief-level in ECA is generally GS-14 or its equivalent or above — hardly mid-level managers and supervisor's . . . We have no intention to present this course to our participants as a substitute for 'full-scale' introductory training."

Not a peep was heard from the ADP analyst after Ira's memo — so the course was on.

Letters to Stone should be addressed to him at Box 270, 1377 K St., N.W., Washington, D.C. 20005.



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LETTERS

Criticizing Computerese

I feel Werner Frank is being overly harsh in "Computerese and Communications Confusion" [CW, Jan. 18]. Computerese is a vast improvement over the Greek jargon of the medical profession or the Latin of biologists.

The newcomer has a responsibility to learn why a given term was chosen over other possibilities and the point of view from which the term is to be understood before concluding that the term in use is confusing, inappropriate, misleading or imprecise.

The critic must also remember the comparative youth of our industry. Time will polish many of the rough spots of our jargon, just as it has done with all other languages, dialects and jargons. If we occasionally appear to grope for a term to describe a concept, it may well be because the idea is novel and not yet well understood. Such lapses should not be taken as permanent defects in our jargon at this still-early stage of the industry's development.

For Frank's benefit, I will elucidate some of the terms he used as examples to the extent that I can.

"Time-Sharing": Yes, we really do mean time-sharing and not space-sharing. The concept is that multiple users have what appears to each of them as simultaneous access to the computer's resources (not just space). The term was never intended to be understood from the point of view of the CPU.

"OEM" (Original Equipment Manufacturer: From the point of view of the buyer, the company that puts all the pieces of a computer system together into a complete package (and provides support for it) is the OEM, whether that company is a manufacturer or not.

Your automobile is certainly not manufactured entirely by any single company such as Buick, but Buick assumes responsibility for the final product and all its components.

Any vendor who wants to establish the same relationship with its clients is every bit as entitled to use the term "OEM" as Buick is. Strictly speaking, this term is not computerese since it originated outside the computer industry.

"Transparent": Frank has once again gotten confused by his dictionary. "Transparent" means "being invisible," not "being visible" as he claims; and this is precisely what we mean when we use the term in our jargon.

Again, point of view is important: What is invisible and, therefore, transparent to applications programs is often very visible and nontransparent to the operating system programs that support it.

"Syntax": Frank seems to have a faulty understanding of the meaning of the word "syntax." Syntax is the set of rules for putting words together to form phrases and/or sentences in a given language.

Given this definition, it is easily seen that each language has its own rules and, therefore, its own syntax. The examples he gives of sentences from four computer languages each conform to different syntaxes. Sentence diagramming is one method of describing the structure of an English sentence, but it really has nothing to do with syntax in general.

"Personal Computer": This is an excellent example of a youthful term that may in fact require polishing. The concept it attempts to describe has yet to be fully defined. (The computer to which IBM has applied it is well defined, but the marketplace has yet to grasp its full possibilities).

When we can adequately categorize the uses to which the personal computer are being put, we may be able to come up with a more adequate name. Until then, the current term at least describes the general size of this computer in terms of its staffing requirements.

While I must admit that there are a few rough spots in our jargon, when examined in perspective I think it is quite precise and appropriate, especially when compared to other jargons.

I only wish it could retain its precision through the filters of press agents and the lay media.

David Wallis
Systems Support
National Advanced Systems Corp.
Mountain View, Calif.

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LETTERS

Misleading Comments

As a long-time user of Management Science America, Inc.'s (MSA) payroll system, I must rebut certain comments made in "Ready-Made Software Passes College Tests" [CW, Feb. 8]. The article contained misleading comments that I would like to rectify:

- More than two tape drives are not necessary to operate the system.
- In eight years of experience with this system — five of which were with another company — MSA has yet to miss an annual enhancement release as promised.
- MSA gives plenty of time to incorporate the new changes to the old system, certainly more than one month as quoted in your article.
- Compliance with legal requirements is critical, and MSA has kept our system completely current with timely tax and other bulletins throughout each year as regulatory changes occur.
- Phone support is a fact with MSA users; no "contract" is necessary except the maintenance agreement. If you don't keep up with maintenance, you can't expect MSA to work out problems on a neglected system.

In all my years connected with the MSA payroll system, it has performed extremely well, and support — whether inquiring about a problem or a change — has been answered in an expeditious manner.

Graeme M. Case
Project Manager
Payroll and Personnel Systems
Foremost-McKesson, Inc.
San Francisco, Calif.

Inadvertent Error

I inadvertently made an error in my article comparing four relational data base management systems "Relational DBMS Compared" [CW, Jan. 11].

Table 2 stated that Ingres (developed by Relational Technology, Inc.) employed a call interface for Pascal and C. It should have said that Ingress supports a precompiler for Fortran, Pascal and C. I apologize for the misrepresentation.

David L. Upham
Relational Data Base Associates, Inc.
Seattle, Wash.

Correcting the Record

"Adapso Begins Grant Program" [CW, Jan. 18] states that "association membership(s)" constitutes one of the criteria for selection in the new Association of Data Processing Service Organizations, Inc.'s (Adapso) fellowship/grant program. This suggests that preference will, in some fashion, be given to Adapso members. In fact, the exact contrary is the case.

Adapso members are companies, not individuals, so that in the strict sense no fellowship/scholarship applicant *could* be an Adapso member.

However, the purpose of the program is to enlarge the body of educated people in the computer field and we have, therefore, made the scholarship available only to those not having an Adapso connection.

At first reading, some Adapso representatives complained that this restriction appeared to discriminate unfairly *against* Adapso people.

Adapso regards its new fellowship program as an important one, in the overall public interest as well as, of course, in the interest of the computer services industry that Adapso represents.

For that reason, I hope you will correct the record.

J.H. Blumberg
Chairman
Adapso Fellowship/Grant Program
Ann Arbor, Mich.

Missed Opportunity

I am writing regarding "DP Sex Service Finds Mates for Real Animals" [CW, Jan. 25].

The International Species Inventory System (Isis) generally appreciates publicity, particularly in professional/technical publications such as *Computerworld*.

The aims and function of the Isis program and the complexity of an international multi-institutional data base are worthy topics for conservation, zoo or computer system-oriented articles. After experience with a number of publications, I recognize that lead-ins like "Animal Dating Game" are almost irresistible in many cases.

However, your article managed to hit a record low. It was especially disappointing that "sex-for-hire" would be the primary theme in a publication of which I thought better. Some of the article was merely pathetic; for example, when you picked up misspellings from the *Los Angeles Times*: "Ellington, New Zealand" (sic).

I suggest that your writer missed an opportunity to write a good article, that the actual story of what Isis does and how it does it would have been much more interesting to your readers and that you hire a proofreader who knows some geography.

For myself and the significant circle of DP professionals who know the facts about Isis, you have harmed your credibility.

Nathan R. Flesness
Isis Project Director
Minnesota Zoological Garden
Apple Valley, Minn.

Prerequisites For Systems

(Continued from Page 37)

- Availability of variable length field capability.

One simple, but possibly unacceptable solution is to record only the phone numbers of the 90% group and maintain the balance in a separate, possibly even a manual, file.

Dates and phone numbers are not the only complex issues confronting the end user in design and use of his data base. Another issue is the handling of name and address. Again, what are the input, storage, search and output considerations? Is it valuable to have search access to last name, Zip Code or street name? Are mailing labels a requirement? Can a search on last name and format for a proper mailing label be reconciled?

Setting up the individual field entities and prescribing the order and format of the data becomes a systems design issue of no small proportion when simple decisions such as field size for names or the format of a person's name must be determined.

We conclude that there are certain conventional systems concepts that may be familiar to trained DP professionals, but are completely beyond the experience of casual computer users.

No degree of user-friendliness can by itself overcome the need for understanding fundamental concepts and trade-offs in the design of computer applications. This knowledge must be acquired through formal educational processes.

Frank is executive vice-president of Informatics, Inc. in Woodlend Hills, Calif.

UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK

In re O.P.M. LEASING SERVICES, INC.,
Debtor.
Reorganization No. 81-B-10535 (BRL)

In re CALI TRADING INTERNATIONAL, LTD.,
Debtor.
Reorganization No. 81-B-11205 (BRL)

In re O.P.M. LIFE INSURANCE FUND,
Debtor.
Reorganization No. 81-B-11749 (BRL)

In re O.P.M. COMPUTER SERVICES, INC.,
Debtor.
Reorganization No. 81-B-11850 (BRL)

In re O.P.M. LEASING SERVICES (CANADA), LTD.,
Debtor.
Reorganization No. 81-B-12193 (BRL)

NOTICE OF ENTRY OF ORDERS REQUIRING CREDITORS TO FILE PROOFS OF CLAIM

TO ALL PERSONS ASSERTING A CLAIM AGAINST ANY OF THE ABOVE REFERRED TO DEBTORS

PLEASE TAKE NOTICE, that the United States Bankruptcy Court for the Southern District of New York has entered orders requiring all persons who assert a claim against any of the Debtors arising, with respect to such Debtor, prior to the following respective dates,

O.P.M. Leasing Services, Inc. - March 11, 1981
Cali Trading International, Ltd. - June 26, 1981
O.P.M. Life Insurance Fund - September 3, 1981
O.P.M. Computer Services, Inc. - September 22, 1981
O.P.M. Leasing Services (Canada), Ltd. - November 9, 1981

whether such claim is fixed, liquidated, unliquidated, contingent or disputed, to file a proof of claim in accordance with the instructions set forth below with James P. Hassett, Trustee, on or before MARCH 30, 1982.

Exceptions: Persons who assert claims solely as co-drawers, sureties or guarantors, must file a proof of claim as required herein on or before April 30, 1982. Persons who assert claims solely by reason of the recovery by any of the Debtors' estates of money or property or the rejection by such estate of an executory contract or unexpired lease shall file a proof of claim in accordance with the Court's orders within thirty (30) days of the recovery of the money or property by the estate or the rejection by the estate of the executory contract or unexpired lease.

A creditor may, for cause shown, apply to the Court prior to the expiration of the bar date for an order extending the bar date as to such creditor. Any such application must be on three days prior written notice to the attorneys for the Trustee.

ALL PERSONS WHO FAIL TO FILE A PROOF OF CLAIM IN ACCORDANCE WITH THE COURT'S ORDERS SHALL BE FOREVER BARRED FROM ASSERTING A CLAIM AGAINST SUCH ESTATE.

Proofs of claim should be filed in conformity with Official Form 16 to the Bankruptcy Rules of Procedure with: James P. Hassett, Trustee, in care of O.P.M. Leasing Services, Inc., 71 Broadway, New York, New York 10006, ATTN. Claims Department (not with the Clerk of the Court).

Further information may be had from the Trustee or his attorneys listed below.

Dated: New York, New York
January 11, 1982

BY ORDER OF THE COURT
BURTON R. LIFLAND
UNITED STATES BANKRUPTCY JUDGE

JAMES P. HASSETT, Trustee of O.P.M. Leasing Services, Inc. and Cali Trading International, Ltd.
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New Password System, Too

Task Force Tunes Up Auto Club Security

DEARBORN, Mich. — To beef up the security at its administrative office computer operations and statewide computer network, the Automobile Club of Michigan Insurance Group created an internal task force and initiated a new password system.

increased awareness of serious security problems in the DP industry stimulated the company to analyze its own computer operations and investigate more comprehensive protection measures, according to James D. Cooper, administrative manager for computer operations.

The Automobile Club of Michigan provides travel, touring and emergency road services. in addition, it is an all-lines casualty insurance company offering 1.25 million policyholders auto, life, home and boat insurance and claims services through 56 branch offices statewide.

Point-of-Sale Terminals

Cooper explained that the company functions via a teleprocessing network of approximately 1,200 IBM 3270 and 70 NCR Corp. point-of-sale terminals. The Automobile Club currently has an IBM 370/168 uniprocessor and an IBM 370/168 attached processor. Each has 8M bytes of memory and runs under MVS, with plans to move to MVS/SP1 with the installation of an IBM 3081 system in the spring of 1982. The club also is using IBM's IMS data base management system.

In 1979 consultants for the Auto Club suggested that analysis of security measures go beyond the computer facility itself and include functional areas that create, process or use computer data, Cooper explained. Under the coordination of a specially created Corporate Data Systems Security Review Committee, which was composed of DP personnel, but included representatives from functional processing areas of the company, the Data Processing Division conducted an extensive study of both data and physical security risks in the summer and fall of 1979.

Working in conjunction with internal data processing auditors, the review committee developed approximately 100 recommendations for enhancing overall security throughout the company, Cooper said. Prior to this analysis, on-line logical terminal security on IMS, with some limited application security, existed. However, there was not an overall network terminal password security system.

"The review committee specifically recommended that a new password security system be installed to reduce the risk of easily bypassing the old, inadequately supervised system," Cooper said, adding, "The committee further specified that the new system should permit access only by independent, security-authorized individual user identification." This included, for example, employee number and a user-created password, which had to be changed every 30 days. Once access was

(Continued on Page 42)

DG Enhances Productivity Aids For 16-, 32-Bit Eclipse Systems

WESTBORO, Mass. — Data General Corp. has enhanced the productivity aids available for both its 16- and 32-bit Eclipse information systems. In addition, the vendor claimed it has increased the runtime performance of its 32-bit APL programming language and has added support for enclosed arrays and a screen-oriented editor.

The 32-bit AOS/VS Basic programming language reportedly now incorporates functional enhancements that facilitate the writing of interactive, screen-oriented programs and permit programs to take full advantage of the vendor's Infos file management system. A set of structured programming constructs also has been added to AOS/VS Basic, offering improved programmer productivity.

DG's Swat high-level language debugger can now support 32-bit Cobol under AOS/VS and 16-bit Ansi Fortran 77 under AOS, the vendor said. in addition, a capability has been added to the Swat debugger to enable users to interact with the assembly language debuggers.

Describing the 32-bit APL enhancements, the vendor said the 512M bytes of work space in AOS/VS APL lets users organize a large file as a single array and manipulate that entire array. Enclosed arrays are said to enable users to specify elements within arrays that are themselves arrays, providing for easier expression of complicated operations.

The screen-oriented editor reportedly lets users modify APL-defined functions and arrays more easily. Operating with the vendor's Model 6110 APL Dasher terminal, the editor was designed to make use of function keys for editing commands. Current users of 16- and 32-bit Eclipse information systems who have DG's Software Subscription Service (SSS) will receive the enhancements to the software productivity aids free of charge. AOS/VS APL users who have the SSS will receive the new AOS/VS APL for no charge. The software fee for AOS/VS APL, which includes the initial license, the SSS, comprehensive software support and one training credit, is $12,400.

DG is located at 4400 Computer Drive, Westboro, Mass. 01581.

CA's 'Program Performance Analyzer' Now Works Under DOS/VS, VSE

JERICHO, N.Y. — Computer Associates international, inc.'s performance monitoring and measurement package is available now for users of IBM DOS/VS(E) systems.

CA-Jasper/PPA (Program Performance Analyzer) was designed to assist in the efforts of tuning on-line user transactions written for IBM's CICS/VS, These transactions can be written in Cobol, assembler or PL/I.

Operations consist of three phases, the vendor explained. The first involves the execution of a monitor program to provide performance snapshots of as many as 33 different transactions under the CICS/VS system. intervals for sampling and the number of samples are defined by the user and may be changed dynamically. The second phase consists of the statistical sort. The last phase is the analytical report phase.

The analytical reports produce activity profiles by transaction or across transactions showing total activity for individual phases, the vendor continued. Profiles depict the demands placed on the subsystem by the transaction and the subsequent effect on response time.

CA-Jasper/PPA also may be used to monitor performance of any batch program, according to the vendor. It is priced between $2,500 and $4,000 and is available from Computer Associates international, 125 Jericho Tnpk., Jericho, N.Y. 11753.

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Replaces ICCF

'Condor' Now Supports IPO/E

CULVER CITY, Calif. — Phoenix Computer Corp. has announced software said to provide support for IBM's System IPO/E and to replace IBM's Interactive Computing and Control Facility (ICCF) as the on-line program development system.

DOS/VSE sites now using the tailoring, service and feature installation tasks of IPO/E reportedly can do so using Release 5.1 of Condor. A Condor user can invoke the services of the VSE/Interactive Productivity Facility or the VSE/Interactive Problem Control System from the Condor terminal.

Release 5.1 support for IPO/E is available for DOS/VSE Release 2 and later. The base price of Condor is $14,500, but the typical package sells for $18,500 with optional features, according to the firm. There is a two-, three-, four- or five-year full equity installment purchase plan and e three- or five-year no-equity lease plan, the vendor said.

The firm is located at 11949 Jefferson Blvd., Culver City, Calif. 90230.

Finance Systems Put on NCSS Net

WILTON, Conn. — National CSS, Inc. (NCSS) has introduced two accounting systems for use on its time-sharing facilities. Both systems, the CSS/AP+ and CSS/GL+, are comprehensive accounting programs for interactive use.

CSS/AP+ can process contracts, handle prepaid invoices, track cash requirements and handle check printing and register. The product includes a series of 14 reports for monitoring various requirements, the vendor said.

CSS/GL+ is an interactive system for automating general ledger accounting. It provides users with extensive budgeting, modeling and planning capabilities designed to enhance the overall control and management of the accounting function, the vendor said.

Additional information is available from NCSS at 187 Danbury Road, Wilton, Conn. 06897.

Software Debugs Fortran For IBM Users

ANAHEIM, Calif. — A Fortran debugging aid designed to eliminate the need for ebend core dumps has been developed by Pilkerton International for users of IBM MFT, MVT, VS1 or VS2 systems.

The software reportedly enables the current value of variables to be displayed in their correct format and in decimal, floating point for real numbers and integer for integers. Variables also are displayed with correct subscripts, the vendor said.

Conversion of hexidecimal to decimal is not needed, the vendor said, adding that the user has control over various options in the program and can select only those debugging options needed. The program does not alter execution of Fortran programs or take additional CPU time for program execution.

The Fortran debugging aid program requires less than 1,000 bytes of storage and is furnished with complete documentation end installation instructions, the vendor said. The program is priced at $190. Pilkerton offers a free 21-day trial.

The firm can be reached through Box 6372, Anaheim, Calif. 92806.

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Club Tunes Up Security

(Continued from Page 41)

gained, the user would be limited to only those transactions required to perform specific job responsibilities.

Once its recommendations were presented, the review committee disbanded. However, Cooper noted that the company continued its efforts to upgrade security by establishing a Corporate Data Security Task Force, charged with implementing security measures.

One of the task force's first actions was to implement the specific recommendation of the review committee by installing IBM's Resource Access and Control Facility (RACF), Cooper said. The two-level password security access system was operational by late 1980. A more recent enhancement of this security system has been the installation of an automatic sign-off for terminals inactive for 25 minutes.

Cooper said the Auto Club intends to extend the RACF security system to cover TSO utilized by systems personnel for programming and testing and for other user-oriented program and report writing functions. In addition, the task force has reviewed such items as control of access to programs and data sets for maintenance programming, data set retention requirements and specific controls and approvals for fixes or "zaps" to corporate files to correct programming errors.

In addition to coordinating the Data Security Task Force, e corporate security officer is responsible for preparing and maintaining e disaster recovery plan, Cooper continued. This person also handles manual, off-site records and backup storage and the development of plans establishing an alternate operating site providing total backup for emergency situations.

"In retrospect, the investigations of the review committee and task force merely identified the tip of the iceberg — that is, the most blatant problems facing e company using e large and complex computer operation," Cooper said. "What has been realized is that for every problem resolved, several more surface."

Recognizing Problem Areas

He cited as the biggest task the recognition of major problem areas and creation of a corporate committee for continual monitoring end enhancement of the security systems installed. This has been completed by the Automobile Club. Further, major tasks in the areas of data set security have not yet been accomplished. Cooper said this will be e significant endeavor for a company that has moved toward complete automation of its underwriting, claims, sales, reporting and word processing operations.

"The technical expertise in computer and data security is still in its infancy, for the emerging area of security is as complex as the ongoing refinement and sophistication of computers themselves," he said.

"The Auto Club has committed itself to growth in the security field in order to keep pace with the advancements of technologies and establish itself as one of the leaders in the movement toward the fully functional office of the future."

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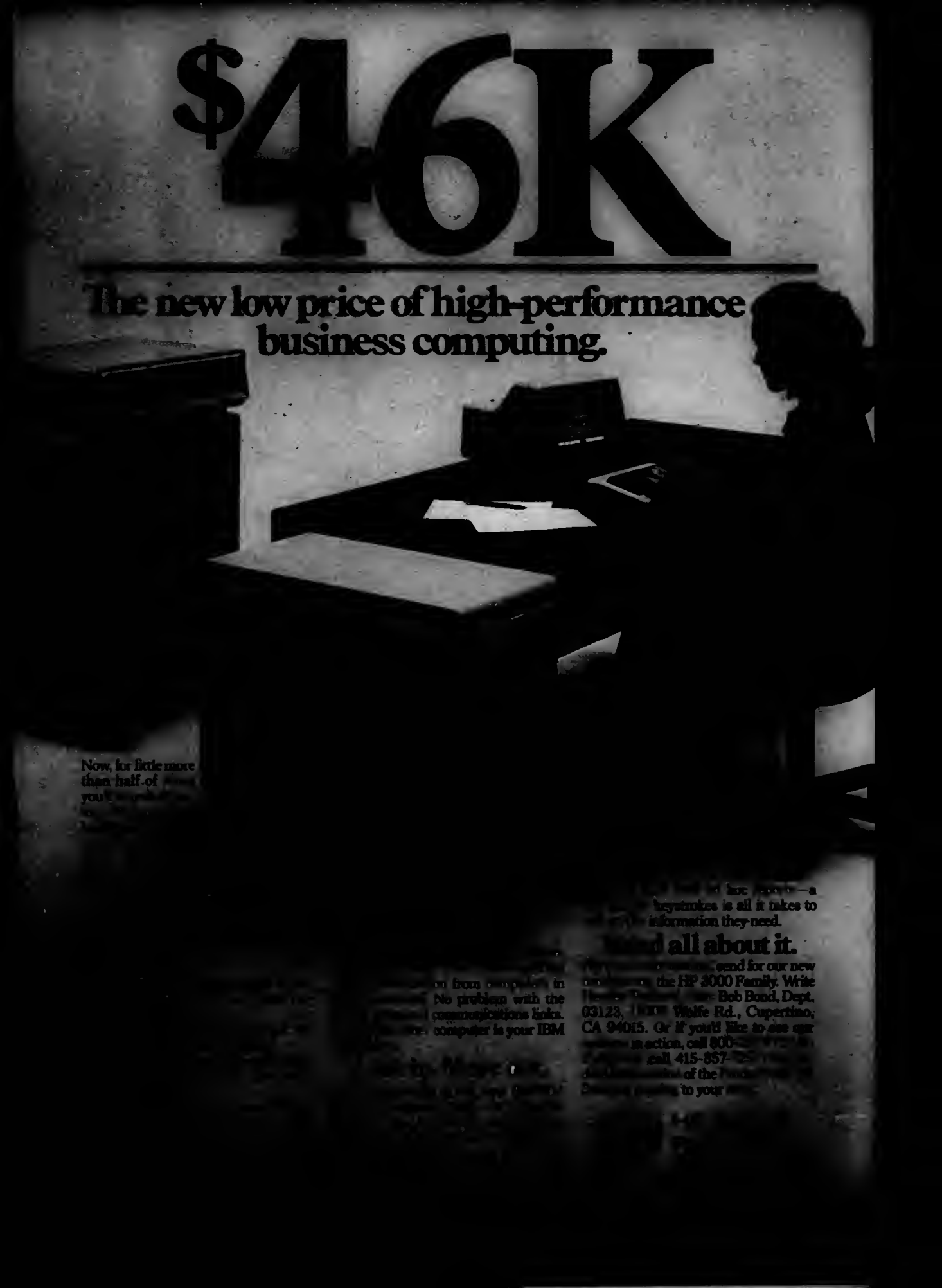

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Monitor Displays CICS Response Times

McLEAN, Va. — Autumn Software Corp. has introduced software that reportedly accumulates and displays on-line both real and transaction response times for IBM's CICS.

A "transaction response time" is defined as the amount of time it takes CICS to process a complete transaction, a company spokesman explained. Real response for CICS is the elapsed time between accepting input from the terminal and issuing the write or send back to the terminal.

Response times can be gathered and displayed for transactions, terminals or groups of transactions or terminals, the spokesman said.

CICS/Response is available for a one-time license fee of $3,000. Autumn Software is based in Suite 1018, 8340 Greensboro Drive, McLean, Va. 22102.

IBM-Compatible 'Libxref' Gains New Features

WEST HARTFORD, Conn. — Multitask, Inc. has announced new features for its library cross-reference package, Libxref, that reportedly will automatically capture and load relationships into a data dictionary.

Libxref was designed for use on IBM and plug-compatible mainframes running under OS, the vendor said. It is said to eliminate the manual data capture generally required to keep the dictionary current and accurate.

It can be used with or without a dictionary to provide reports showing where all DP components are used and how they relate to one another, the vendor explained. This includes a cross-reference of all IBM IMS control blocks, Cobol elements and JCL components.

Libxref is priced between $10,000 and $40,000, depending on options selected. Multitask is located at Suite 15, 1007 Farmington Ave., West Hartford, Conn. 06107.

'VMbackup' Repriced

FALLS CHURCH, Va. — VM Software, Inc. (VMSI) has switched from single-unit pricing to CPU pricing for its VMbackup software. VMSI's pricing is now based on two classes of permanent license based on CPU power.

The first is the limited license for the 4331-2 or smaller IBM CPU, which is priced at $3,995. The second is the unlimited license, which may be used for any IBM 370-compatible CPU. It is priced at $9,200 for a permanent VMbackup license, according to the vendor.

The minidisk backup and restore software is designed to increase the user friendliness of the VM environment, the vendor said. VMSI is located at 7777 Leesburg Pike, Falls Church, Va 22043.

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'DSNPlus' From LHF Helps Develop, Maintain JCL

PASADENA, Md. — LHF Software has released a JCL development and maintenance aid for IBM computers DSNPlus is said to produce three separate listings for any JCL procedure or job stream: input JCL with extracted step names, data set names and primary dispositions; a sorted program/procedure/step list; and a sorted reference list of all data sets and sysouts in the JCL.

The package may be used either in stand-alone fashion or as the last step of regularly scheduled jobs to provide a debugging listing of the JCL on system abend.

The software is available in source code form with complete documentation for $200 from LHF Software, 1289 Magothy Road, Pasadena, Md. 21122.

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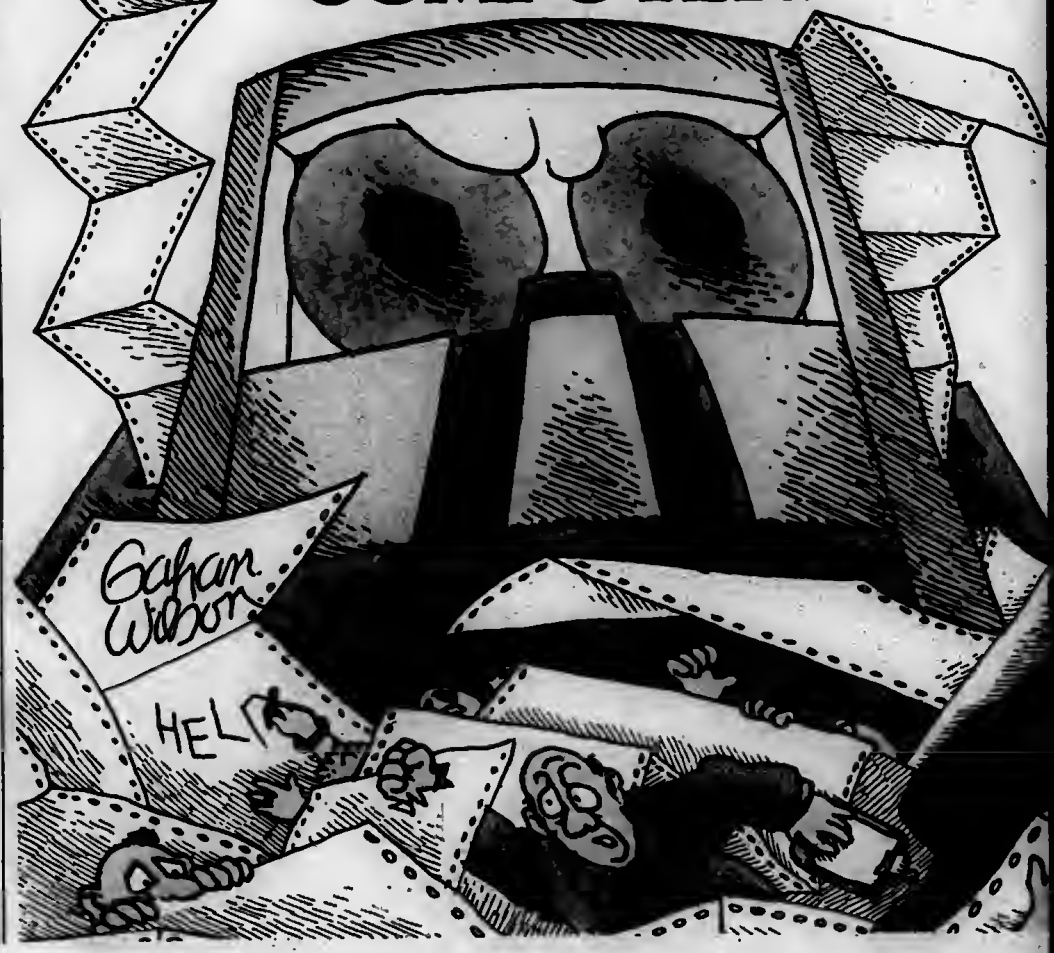

Financial Modeling System Available on UCC Net

DALLAS — University Computing Co. (UCC) has announced the availability of Model, a generalized financial modeling system to assist in business planning and risk analysis. Developed by Lloyd Bush and Associates, it is available on a time-sharing basis through UCC's service center.

Model helps support problem-solving needs by building computer models for business situations, the vendor said. Some typical financial planning applications include spread-sheet analysis and financial statement generation and consolidation.

UCC is based at 1930 Hiline Drive, Dallas, Texas 75207.

Univac Engineering Software Released for the 1100 Series

BLUE BELL, Pa. — Sperry Univac has announced computer-aided engineering software for its 1100 series computers.

The Requirements and Development Processor (RDP 1100) reportedly includes capabilities to control the definition and design phases of the software development life cycle.

Also included are project managerial and systems utility facilities, the vendor said, explaining that the manager of a software development project can use RDP 1100 as an aid to monitor progress, assign priorities, schedule activities and assign organizational responsibilities.

The package includes an integrated data base that serves as the respository of information concerning a development project, according to Univac. A method to edit textual information stored in the data base is provided using the Univac 1100 Conversational Time-Sharing System. Information can be extracted using the vendor's Univac 1100 Series Automated Documentation System.

Ad hoc reports can also be generated from the information in the data base. The RDP 1100 data base reportedly is under control of the Univac 1100 Data Management System.

RDP 1100 will be available in the first quarter of 1982 for $1,000/mo. The vendor can be reached at P.O. Box 500, Blue Bell, Pa. 19424.

'Pride' Software Gains Links To Two DBMS

CINCINNATI — M. Bryce & Associates, Inc. has announced that its Pride automated systems design methodology now includes interfaces to Software AG's Adabas and Control Data Corp.'s DMS-170 data base management systems (DBMS).

The Pride software is available for use on 20 different hardware configurations, according to M. Bryce & Associates. The Adabas package is for IBM system users. The DMS-170 operates primarily on the CDC Cyber 170 and the 6000 series mainframes.

Based on specifications in the Pride automated Information Resource Manager (IRM), the interfaces reportedly are able to generate structures for the applicable DBMS. The IRM contains data on the organization's information resources, including data base considerations, the vendor explained.

Because of its logical independence, the IRM is capable of driving multiple DBMS packages simultaneously, including IBM's IMS DL/1, the vendor continued.

The interfaces cost $7,000 each from 1248 Springfield Pike, Cincinnati, Ohio 45215.

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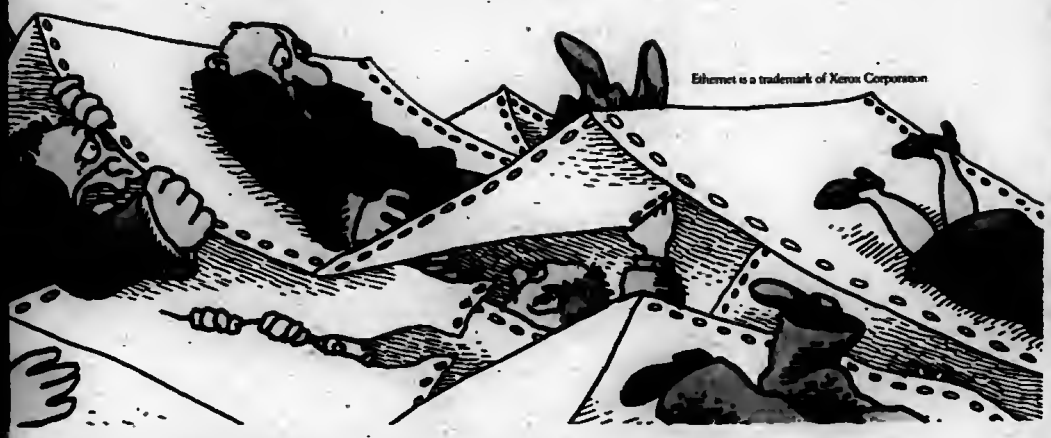

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Plotting Package Library Available for VAX, PDP-11

PLAYA DEL REY, Calif. — Lantor Information Systems, a division of Lantor, Inc., has announced Plato-11, a plotting software package library that can be used with graphics terminals. Plato-11 is a modular graphics software package that can be used on any Digital Equipment Corp. VAX-11 supermini or PDP-11 minicomputer, a Lantor spokesman said.

Plato-11 software modules are able to link to Macro, Fortran, Pascal and other high-level languages, the vendor said, and can be embedded into a system library. The package includes a set of subroutines calling commands and parameter definitions. It is offered on floppy disk and magnetic tape.

An instruction manual is shipped with the Plato-11 or can be purchased separately. The package is available for $750 from Lantor, Inc., 8055 Manchester Ave., Playa Del Rey, Calif. 98291.

Concurrent Tasks Supported

Pascal Program Bows for PDP-11s

PORTLAND, Ore. — Interactive Technology, Inc. has introduced Parallel Pascal for Digital Equipment Corp. PDP-11 processors running under RT-11, as well as DEC's Falcon Single-Board Computer (SBC-11/21).

The vendor said Parallel Pascal is a complete, standard Pascal with extensions that allow the creation of an unlimited number of concurrent tasks, the synchronizing of those tasks, the handling of interrupts and the direction of I/O to hardware registers.

No assembler language or machine code is said to be required.

The extensions do not change the language, the vendor continued, noting that other Pascal programs remain valid and correct under Parallel Pascal.

The language reportedly features a multipass optimizing compiler that generates assembler text for the DEC PDP-11 instruction set. The system includes the compiler, code generator, run-time library in binary form, debugger and utilities. A run-time library source program also is available.

Program Development

Parallel Pascal can be used for program development with DEC PDP-11 RT-11 systems, according to the vendor.

Its compiler translates Pascal source code to Macro-11 assembly language source code, which is then assembled to produce object code. Parallel Pascal object programs can then be linked for execution on all DEC PDP-11 processors, including read-only memory code for the DEC Falcon SBC-11/21.

The package includes the compiler, code generator and runtime library in binary form, a debugger, a user's manual and support programs.

A CPU license for Parallel Pascal is available for $950, the vendor said from Suite 103, 1225 N. W. Murray Road, Portland, Ore. 97229.

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Micro Notes

In this new column, Computerworld *will include information about selected microcomputer software packages. CW will cover only business-related general applications packages and systems software that a large company or an executive in a large firm would use. These include data base management systems, utility software, operating systems and generalized application software not tied to a vertical user market or targeted to small businesses.*

Announcements of products that fit these criteria should be sent to the Editor, Computerworld, *P.O. Box 880, Framingham, Mass. 01701. The announcements should include the price of the product and the type of equipment on which it runs.*

This microcomputer software column will not cover game software packages or software designed primarily for the home computer user or small business user.

A Metaforth cross compiler for CP/M or Cromemco, Inc. operating systems to produce 1979-Standard Forth with an application on an Intel Corp. 8080 or Zilog, Inc. Z80-based machine was introduced by Inner Access Corp. Priced at $450, the software is available on either 5-in. or 8-in. diskettes from the vendor at 517-K Marine View, Belmont, Calif. 94002.

A utility package called Ampersoft, which reportedly extends Applesoft Basic and DOS and offers extra programming space for users of Apple Computer, Inc. Apple II Plus computers equipped with memory expansion cards is available for $59.95 from Micro-Sparc Systems Division, Department P, P.O. Box 325, Lincoln, Mass. 01773.

An enhanced version of its word and text processor package, which includes CP/M and Microsoft Basic capabilities, is available from A.B. Dick Co., 5700 W. Touhy Ave., Chicago, Ill. 60648. The price is $750.

Visicorp. (formerly Personal Software, Inc.) introduced Visi Schedule, a project planning and management package that operates on Apple Computer, Inc.'s Models II and II Plus. It is available for $300 from Visicorp at 2895 Zanker Road, San Jose, Calif. 95134.

A Digital Research, Inc. CP/M 2.2 operating system that is compatible with its Imsai microcomputer line is available from the Imsai Division of Fischer-Freitas Corp., 1149 Grand Teton, Pacifica, Calif. 94044. It is priced at $150 through April 30 and $225 thereafter.

A screen-handler module called Screenmaster is provided in source code for inclusion in Cbasdic-2 programs requiring full/multi screen input with automatic validation, Marketing Essentials, Inc. announced. It is priced at $195 from the vendor at 206 Mosher Ave., Woodmere, N.Y. 11598.

Lexicom, a word processing utility for Apple Computer, Inc.'s Apple II systems, is available for $49.95 from Micro-Sparc Systems Division, Department P, Box 325, Lincoln, Mass. 01773.

A collection of routines designed to enhance the development and debugging of Forth programs and to complement cross-compiler and metacompiler operation are available from Curry Associates, P.O. Box 11324, Palo Alto, Calif. 94306. Pricing is $150 for a single CPU license.

Nevada Edit, a CP/M-based character-oriented full-screen video text editor designed for computer program text preparation, is available for $119.95 from Ellis Computing, 600 41st Ave., San Francisco, Calif. 94121.

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Datapro Directory Lists On-Line Services, Data Bases

DELRAN, N.J. — Datapro Research Corp. has released the *Datapro Directory of On-Line Services* to aid in the locating, evaluating and selecting of on-line services and data bases. The directory has more than 100 on-line services and 500 data bases indexed by product, vendor, application and current pricing.

Commercial on-line services are indexed by suplier as well as by special industry applications. Data bases are indexed by name, abbreviation or acronym. All supplier names, addresses, telephone numbers and key personnel are listed separately in a company index.

The prepublication price for the directory is $340, the postpublication price is $390. Each subscription to the directory includes two loose-leaf volumes, 12 monthly update supplements, 12 monthly newsletters and use of Datapro's telaphona inquiry service, a spokesman said.

Datapro is located at 1805 Underwood Blvd., Delran, N.J. 08075.

T/S Service Helps Firms With Foreign Tax Credits

NEW YORK — Ernst & Whinney has introduced a time-sharing service that produces up to 32 separate reports to haip companies compiy with foreign tax credit laws.

Passport was designed to comply with the Internal Revenue Service rules that were adopted in 1977 for apportioning axpenses for foreign tax credit purposes.

In tax planning, Passport can aid in such decisions as:

- Which foreign corporations should pay a dividend and which section of the Internal Revenua Code should be used for computing earnings and profits.
- Whether a foreign subsidiary should borrow money, or whether the parent company should borrow it and than reloan or contribute it to tha subsidiary.

Passport computations take into account tha affects of foreign currency devaluations and revaluations and fluctuations in tha exchange rates, a spokesman said.

Further information is availabla from Paul Lierman, Ernst & Whinney, 153 E. 53rd St., New York, N.Y. 10022.

Demographic System Goes T/S

ANN ARBOR, Mich. — Comshare, Inc. has announced that the Demographic On-Line Retrieval Information System (Doris) now is availabla on its time-sharing service.

Doris allows users to extract information selectivaiy from a data base of 30 million marketing and demographic data items, tha vendor said.

Doris users can identify tha demographic areas or search out and rank lists of geographic areas that meet a particular set of market criteria, the vendor said.

Comshare is located at 3001 S. State St., Ann Arbor, Mich. 48106.

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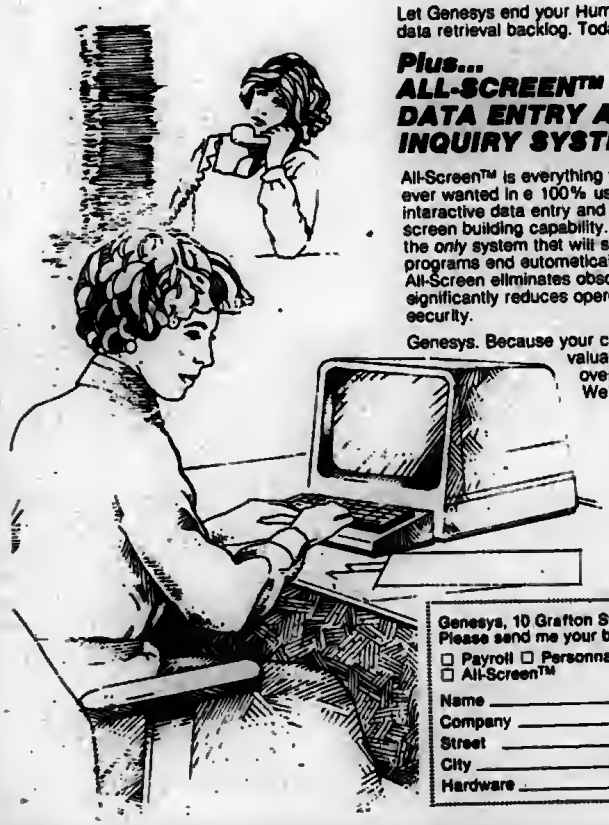

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Raus Updates Finance Package

MISSISSAUGA, Ont. — Raus Computer Systems Ltd. has announced Release 2 of its Datacode Accounts Payable package. This enhanced version adds new features to the package'e capabilities.

These includa duplicate invoice checking, multiple currency capability, one time/temporary vendor creation at invoices input, repetitiva payment capability and the ability to print checks with separate or attached remittance advices, a spokesman said.

The package is written in standardized Ansi Coboi/74 and can be implemanted on any interactiva minicomputer or supermini, Raus said.

The system is menu-driven and operates in an interactive, conversational mode. An interface to tha Datacode Genaral Ledger is provided for on-lina validation and daily or monthly posting. A one-tima license fee is $7,500.

More information is available from Raus, 1545 Dundas St. E., Mississauga, Ont., Canada L4X 2T8.

Mercator Systems Get Manufacturing Tool

SUNNYVALE, Calif. — Mercator Business Systems has announced a manufacturing software package for its Model 4000, 3000 and 5000 small business computers. The package is designed for the small to medium-size company grossing between $5 million and $100 million.

Tha system allows tha user to coordinate and control the vital functions of stockroom, work-in-progress, finished goods inventory, job and product cost accounting, labor distribution, purchasing and product structure maintenance, according to the vendor. "Preparing For Your Computer System" is the manual that comes with the package.

The package is available for between $10,000 and $15,000 from Mercator Business Systems, 1294 Lawrence Station Road, Sunnyvala, Calif. 94086.

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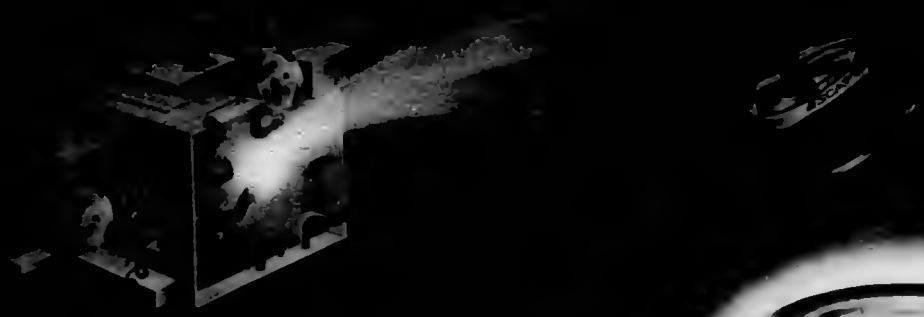

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'Vehfleet VO2' Fits System/34

ARCADIA, Calif. — Vehfleet V02, designed to help IBM System/34 users manage vehicle costs and usage, was announced by Comprehensive Rehabilitation Services, Inc. (CRS).

The system produces reports that provide detail and summary information for individual vehicles or the entire fleet. Costs are shown in different categories such as maintenance, fixed and fuel costs and costs per month, per mile and total.

Maintenance, license renewal and lease expiration warning messages are also shown.

A demonstration version of Vehfleet V02 is available for $25. The system costs $750 from CRS, 41 W. Santa Clara St., Arcadia, Calif. 91006.

'Screen Builder' Aids System/34

WINTER PARK, Fla. — Westmoreland Systems, Inc. has introduced the Screen Builder for the IBM System/34. The software builds and maintains screen formats.

Constant fields and variable fields can be keyed in directly on the screen in the position where they will appear, the vendor said. The source code will then be generated from the screen layouts. After updating the source, the screen format is compiled and a screen layout is printed.

Screen Builder costs $250 from Westmoreland, 228 Park Ave. N., Winter Park, Fla. 32789.

On-Line Accounting Tool Runs on System/32, 34, 38

CARTHAGE, Mo. — CMC Software has announced the release of the on-line Administration System, designed to handle preregistration, payroll, accounts receivable, accounts payable and general ledger for educational institutions with IBM System/32, 34 and 38 computers.

The programs are designed for fund accounting concepts handling up to 99 funds and 9,999 departments. They also include class/course verification, student bill/checklist printed at registration time, preenrollment modules and alumni contribution tracking.

The payroll system allows taxes to be withheld as defined for each employee. An automatic salary load can also be used.

The system comes with 4,000 pages of operator and programmer documentation and is priced at $15,800 from CMC Software, P.O. Box 718, Carthage, Mo. 64836.

Package Aids In Accounting Of Fixed Assets

MARINA DEL RAY, Calif. — International Management Systems Corp. has announced the Fixed Asset Accounting System for the IBM System/34 and System/38 that provides for accounting of fixed assets under the new rules and regulations of the 1981 Economic Recovery Act, the vendor said.

The system contains other enhancements such as 13-period accounting, multiple company selection, depreciation forecasting and adjustments and calculation of investment tax credit and recapture. The software is menu-driven. International Management Systems offers on-line interactive capability and batch for the package.

The system is available for $6,500 to $7,500 from International Management Systems, Suite 217, 4676 Admiralty Way, Marina Del Ray, Calif. 90291.

Credit Union Tool Runs on System/34

HAGERSTOWN, Md. — An on-line, interactive credit union management system for the IBM System/34 was released here by MD-Dexel Systems Corp.

The software, designed for credit unions with 2,000 or more members, provides share accounting, loan accounting, loan disclosure and payment calculations (including skip payments), posting of payroll deductions and share-to-loan transfers, delinquent loans, club accounting, counter checks, mailing labels and management reports, the vendor said.

The software, priced at $10,250, includes complete documentation and operating instructions. MD-Dexel is located at 479 N. Potomac St., Hagerstown, Md. 21740.

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8086/8087/8088 CROSS SOFTWARE PACKAGES

1 C cross compiler for the 8086. All facilities of the complete C language, including floating point for the 8087, are supported. Optionally, memory can be allocated for use with the 8088. Output is symbolic assembly language. The compiler is suitable for use in porting UNIX to the 8086.

2 Cross assembler/linker/librarian/downline loader for the 8086. Assembler input is an extension to that used by Intel. Loader output is a file in standard Intel hex format.

3 Simulator/debugger for the 8086. Capabilities include display, breakpoints, interpretive execution, as well as many others.

Host System: PDP-11 running RT-11, RSX-11M, UNIX/V6, UNIX/V7, or VAX-11 running VMS, UNIX/32V.

For additional information:

Advanced Digital Products, Inc.

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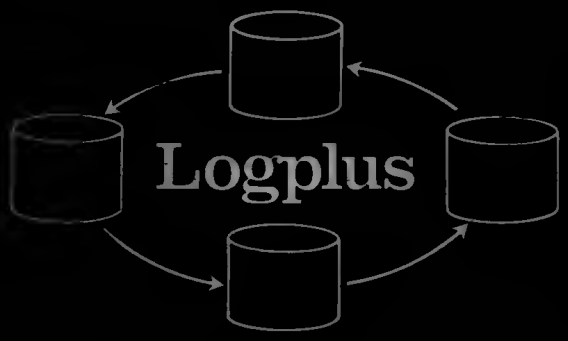

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Cross-Reference Facility Released for EDL Programs

BURLINGAME, Calif. — Distributed Micro Systems has released a cross-reference facility for EDL, the programming language for the Event Driven Executive (EDX) operating system on IBM Series/1 systems.

EDXREF reportedly will provide a cross-reference listing of all the symbols used in an EDL program. Presented in sorted alphabetical order, the listing provides the name and value of a symbol, the statement number where it was defined and all source statements where the symbol was referenced, a spokesman said.

Users must currently be under Release 3 of EDX and have licensed the IBM Program Preparation program products and the IBM Sort/Merge Program Product. The license fee for a single CPU is $600 plus a $50 generation charge. The firm is located at 2327 Hale Drive, Burlingame, Calif. 94010.

Contractors Get Datamaster Aid

ATLANTA — Software for IBM's System/23 Datamaster that reportedly enables a contractor to automatically perform cost estimating and track actual costs against the estimate has been announced by the firm.

The Estimating and Cost Tracking System, developed by Contractors Management Systems of Washington, D.C., is designed to handle multiple jobs that can be broken down into major estimating divisions, activities within those divisions and items within each activity, a spokesman said.

The software requires a Datamaster with 96K bytes of main memory and 2.2M bytes of diskette storage, the 3780 Integrated Diskette Controller and the 6300 Diskette Sort Feature, at a total cost of $8,080.

Any printer — 80-, 160- or 160/40 char./sec — may be used, ranging in price from $2,400 to $3,500. The program will be available March 26, priced at $2,995. IBM's General Systems Division can be reached through P.O. Box C-1645, Atlanta, Ga. 30301.

Telephone Monitor System Announced for Series/1

SPRING HOUSE, Pa. — Whelan Associates, Inc. has announced the availability of the Telemarketing/Series 1 System, designed to guide and monitor the telephone calling process.

The software is currently available for the IBM Series/1 and includes a data base manager, on-line security system and query facilities.

The system provides a computerized base of customer data to prevent unwarranted disclosure, a guide to ensure calls are made on schedule, an audit trail of the call so information is not lost, the ability to combine information with an appropriate text to produce a personalized customer letter and performance measures to determine telephone representatives effectiveness and to monitor sales and services, a vendor spokesman said.

The system also forwards information from the call to distribution points and/or marketing/sales management, according to Whelan Associates.

The one-time licensing fee is $30,000, with lease arrangements and custom modification available, from Whelan Associates, Gwynedd Plaza, A/E Center, P.O. Box 650, Spring House, Pa. 19477.

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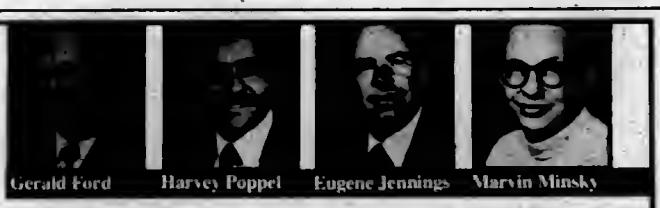

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Data Bits

Tymshare Designs Terminals For Non-DP Professionals

CUPERTINO, Calif. — Tymshare, Inc. has introduced a line of compact personal information terminals with starting prices under $500.

The Scanset terminals are designed for one-button information access by non-computer professionals. The terminals feature user-programmable function keys, a 9-in. diagonal screen with 24 lines of text and limited graphics capability.

The Scanset Model 410 with automatic computer login costs $495. Model 415 with built-in modem, automatic telephone dialer and automatic login costs $649. Tymshare is located at 20705 Valley Green Drive, Cupertino, Calif. 95014.

Dot Matrix Impact Printer Available from Tektronix

BEAVERTON, Ore. — A 340 char./sec, bidirectional dot matrix impact printer is available from Tektronix, Inc.

The Model 4643 reportedly features a 132-char. line and prints a minimum of 125 line/min.

The 7 by 7 printer is said to be RS-232-compatible and costs $4,200 from the firm at P.O. Box 500, Beaverton, Ore. 97077.

Several Micom Micro8000s Receive Price Reductions

CHATSWORTH, Calif. — Micom Systems, Inc. has announced price reductions of $1,000 and $1,300 on several of its Micro8000 concentrator modems.

The two-, eight- and 16-channel 4,800 bit/sec models have been reduced $1,000 each to $3,450, $4,750 and $6,500, respectively.

The 2-, 8- and 16-channel 9,600 bit/sec models have been reduced $1,300 each to $4,450, $5,750 and $7,500, respectively.

Similar savings can be realized on multipoint models (for multidropping teletypewriter-compatible terminals), with typical prices beginning at $3,250 with matched 4,800 bit/sec modems. In addition, prices for versions with 2,400 bit/sec matched modems begin at $1,650, Micom said from 20151 Nordhoff Ave., Chatsworth, Calif. 91311.

Asynchronous Data Mux Compatible With T1 Systems

KIRKLAND, Wash. — Teltone Corp. has unveiled an asynchronous data multiplexer compatible with standard T1 digital carrier transmission systems.

The M-825 can also be used in private data networks over four-wire (two twisted pairs) circuits. It is designed to accommodate 32 RS-232C-compatible, asynchronous, full-duplex data sources, with a maximum rate of 9,600 bit/sec on all ports simultaneously.

The time-division multiplexer is transparent to the user in both data rate and protocols used. It costs $3,200 from Teltone at P.O. Box 657, 10801 120th Ave., N.E., Kirkland, Wash. 98003.

Kit Available to Upgrade ADM-3, ADM-3A Terminals

BETHESDA, Md. — The Interboard-3A kit for upgrading Lear Siegler, Inc. ADM-3 and ADM-3A terminals is available from International Systems Marketing, Inc.

The kit has a Z80 microprocessor with 64K bytes of memory and a floppy disk controller that fits inside the terminal. Peripherals can be attached via one RS-232 and one Centronics Data Computer Corp. parallel port.

The kit costs $895 from International at 5161 River Road, Building 20, Bethesda, Md. 20816.

Ten Years After Its Conception, Tryouts of Videotex Scheduled To Begin in the U.S. Market

By Gary D. Rosch
Special to CW‡

It was only 10 years ago that Sam Fedida of the British Post Office telecommunications research staff (now known as British Telecom) conceived of a viewdata service. Viewdata — or videotex, as it is now called — was developed as a mass interactive data retrieval service for residential and commercial applications.

Designed to utilize existing hardware where possible, videotex terminals generally consist of a television set or monitor, with additional electronics to support alphanumeric and graphics displays plus other specialized functions.

Full commercial videotex service was implemented in 1979 in Great Britain. At least 10 countries in Europe plan to have videotex projects in commercial development next year.

In the U.S., it was recently announced that AT&T and Knight-Ridder Newspapers, Inc. intend to have a market trial of videotex service in 1983. Continental Telephone Co. intends to institute a market test in Manassas, Va., near Washington, D.C., this year.

Videotex depends heavily on the implementation of standards for it is designed to be a public service requiring data bases, network protocols and computers operating on a countrywide or worldwide basis. Also, standardization helps reduce the price to the end user of videotex terminals, software and services.

It is worth reviewing the various standards developed to provide videotex service to understand the current videotex-standards debate. Currently, videotex services in Europe require a V.23 CCITT interface. This provides for a 1200/75 bit/sec asynchronous, full-duplex service. The basic alphanumeric coding structure is similar to Ascii, utilizing a seven-bit coding structure.

Coding Schemes

Prestel, the original videotex service developed in Great Britain, uses a spacing, serial-attribute coding scheme. An attribute is a command that provides for colors, flashing and other functions.

Spacing serial-attribute coding provides for a very efficient and economical use of data transmission time and terminal semiconductor memory. A terminal built for spacing serial-attribute displays of 40 characters by 24 rows of text requires only 1K byte of random-access memory.

In addition, no microprocessor is required in the terminal. There are some limitations to spacing serial attributes when more sophisticated graphics are displayed. However, for many types of display, serial graphics are extremely useful.

Somewhat after the introduction of Prestel, the French telecommunications research laboratories devised a parallel attribute coding scheme known as "Antiope" or "Teletel." These parallel attribute terminals require a 16-bit memory/char. stored, as opposed to 8 bit/char. for Prestel.

The coding structures for both Prestel and Teletel were accepted by the International Telephone and Telegraph Consultative Committee (CCITT) in November of 1980. CCITT is a specialized body of the International Telecommunications Union with more than 150 member nations.

Cept Standard

While these recommendations were moving towards ratifications by CCITT, the European Conference of Post and Telecommunications Administrations (Cept), a consortium of 26 countries representing virtually all Western European countries, became involved in an effort to integrate the two alpha-mosaic coding schemes — Prestel and Teletel. In May 1981, Cept announced the development of a videotex reference terminal model that utilized both serial and parallel coding. While full implementation of the standard required Cept terminals, both Prestel and Teletel terminals and data bases could work with the new standard.

The Cept standard provides for the implementation of DRCS (Dynamically Redefinable Character Sets). DRCS frees terminals from the restrictiveness of the character sets already locked into the terminal at the factory. A videotex computer may send new characters or graphics to be stored in the terminal and later accessed. This feature may be used to permit the loading of foreign alphabets, special symbols, or shapes to provide higher quality graphics.

Canada, along with Britain and France, has developed a videotex system, but the Canadian "Telidon" system uses a geomet-

(Continued on Page 60)

Ungermann-Bass Local-Area Net Gains User Programmability

SANTA CLARA, Calif. — Ungermann-Bass, Inc. has added user-programmability features to its Net/One local-area network with a software development support package that reportedly allows users to modify the local-area network products at a number of network architectural levels.

The software package is suitable for all the firm's current networking projects (4M bit/sec and 10M bit/sec baseband) and will be compatible with future products as well, according to the vendor. It will run on the standard Ungermann-Bass Network Configuration Facility (NCF). In addition, any host computer can be easily adapted to generate the software for subsequent downloading onto the network, according to the vendor.

It reportedly operates under the CP/M operating system, which allows access to more than 3,000 languages and applications programs including high-level programming languages such as C.

One way the package can be used is in modifying existing device drivers for the interconnection of applications-unique equipment. It can also be used to write programs for stand-alone applications such as word processing, the vendor said.

The software development package comes as part of Net/One for no extra charge, Ungermann-Bass said from 2560 Mission College Blvd., Santa Clara, Calif. 95050.

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Altos' First CRT Terminal Features Detached Keyboard

SAN JOSE, Calif. — Altos Computer Systems, Inc. has introduced its first CRT terminal, the Altos 1, a detached keyboard model with tiltable rotating display.

The Altos 1 features a low-profile detached typewriter-style keyboard with 105 keys. It is connected via a 6-ft cable to the rotating, tilting display, with a green-phosphor screen, according to the vendor.

The keyboard/display can be configured to meet the needs of any operator and any workstation, Altos said.

Keyboard format capabilities are 24 lines with 80 char./line, with two additional lines for messages and function-key identification. Eight program function keys plus a special function key provide up to 96 codes and 14 keys include the numbers zero to nine, period, comma, minus and enter/tab, the vendor said.

Functional command, editing and cursor keys allow full editing options as well as send and print.

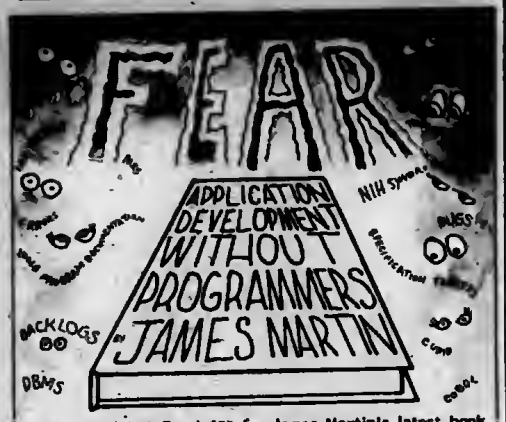
The display is reportedly capable of graphics line drawing and horizontal/vertical split screen with independent scrolling.

The Altos 1 features 15 transmission bit/sec rates from 50 to 9,600 bit/sec via a standard RS-232C interface. The printer port allows data transfers at rates between 50 and 9,600 bit/sec, Altos said.

Standard power is reportedly 120 Vac (60Hz) with 240 Vac (50Hz) optional. Operating temperature range is 0°C to 55°C (32°F to 131°F).

The Altos 1 is priced at $995 in single-user quantities; quantity discounts are available. Delivery is four weeks after receipt of order.

More information is available from the vendor at 2360 Bering St., San Jose, Calif. 95131.



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Source Code Available For IBM 3270 BSC

MILWAUKEE — Data Retrieval Corp. has announced its intention to sell the source code for IBM 3270 Binary Synchronous Communications (BSC).

Written in 8080 assembler for an Intel Corp. ISBC 544 intelligent communications controller, the source code reportedly utilizes three of the four available ports. Port 1 communicates with a host computer, emulating an IBM 327X control unit. Port 2 communicates with an IBM 327X control unit, emulating a host computer. Port 4 communicates with an IBM 3101 terminal, emulating an IBM 3278 terminal, according to the vendor.

Under software control, additional source code written in PLM/86, running under the IRMX 86 operating system, reportedly communicates with the Intel ISBC 544 and completes the total communications link.

The source code is available on an 8-in. single-density diskette or in printout form for $500 from 5600 W. Brown Deer Road, Milwaukee, Wis. 53223.

Protocol Handler Supports Remote Communications

READING, Mass. — A protocol handler and integral modem designed to reduce computer network costs and improve efficiency is available from Level Two Systems, Inc.

The Model XKL-110 protocol handler reportedly provides the remote communications capabilities needed to interface an RS-232C-compatible peripheral to a computer or telecommunications network, freeing the user from dependence on a single network supplier. Eliminating the need for external modems, the unit features an integral Bell-type 202 modem.

It can be furnished in variants to handle most popular bit- and byte-oriented protocols, including IBM's Synchronous Standard Data Link Control Binary Synchronous Communications, 2848/2260; NCR Corp. 2261; Burroughs Corp. TC700; Digital Equipment Corp. DDCMP; Sperry Corp. Uniscope; and Honeywell, Inc. VIP.

The unit costs $1,200 from Level Two at 14 Dudley St., Reading, Mass. 01867.

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Programable	No	No	Yes	Yes	Opt	No
Non-Volatile	No	No	No	Yes	No	Yes
14" Screen	No	No	No	Opt	Opt	Opt
Screen Saver	No	Yes	No	Yes	No	Yes
132 Character Line	No	No	No	No	No	Yes
Status Line	No	Yes	Yes	Yes	No	Yes
Smooth Scroll	No	No	Yes	Yes	Yes	Yes
Line Drawing Set	No	No	Yes	Yes	Yes	Yes
Block Graphics	No	No	No	Yes	No	No
Tektronix Graphics	Opt	Opt	Opt	No	No	No
Foreign Character Sets	Yes	Yes	No	Yes	No	No
Block Mode	No	Yes	Yes	Yes	Opt	No
Set-Up Mode	No	Semi	Semi	Yes	No	Yes
Additional Pages Memory	No	1	3	7	No	No
Printer Port	Yes	Yes	Yes	Opt	Yes	Opt
Bi-Directional	No	Yes	Yes	Yes	No	Yes
Buffered	No	Yes	Yes	Yes	No	Yes
Emulations:						
ANSI11 X3.64	No	No	No	Yes	No	Yes
Hazeltine	Yes	No	No	No	Yes	No
Lear Siegler	Yes	No	No	No	Yes	No
Adds	Yes	No	No	No	Yes	No
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I/O, RS-232C Switch Boxes Fit Centronics Printers

BELLEVUE, Wash. — A subcompact Centronics Data Computer Corp. I/O parallel switching box and an RS-232C serial switching box are available from Automated Control Systems, Inc.

The ACS 200 A-B Switch solves the problem of unplugging one cable and hooking up another in order to change printers. The computer or CPU port hooks up to the "A" side of the three-position switching box, and the printers plug into sides "B" and "C." A front panel switch controls printer choice. The ACS 232C A-B Switch allows a single computer port to support two terminals. It is fully buffered and operates at any transmission rate to 1M bit/sec.

Each switch costs $129.95 from ACS at Suite 4, 1801 130th N.E., Bellevue, Wash. 98005.

Rixon Offers Network Mux

SILVER SPRING, Md. — A networking statistical multiplexer said to provide error-free transmission of up to 240 asynchronous channels over up to 15 composite links is available from Rixon, Inc.

The DCX840 uses five basic types of card modules: the low-speed channel module, the automatic repeat request module, the buffer module, the systems test and configuration module and the bus extension module.

The stand-alone unit starts at $9,980, and the rack-mounted version starts at $9,530. Rixon is at 2120 Industrial Pkwy., Silver Spring, Md. 20904.

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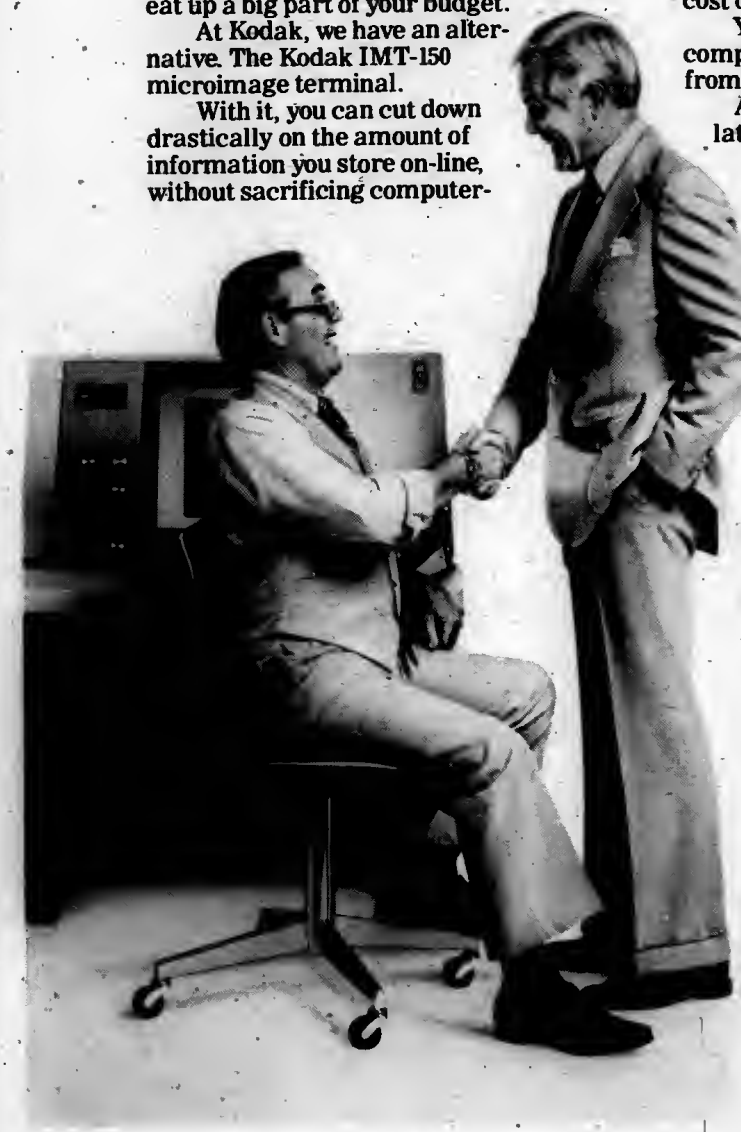

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After 10 Years, Videotex Gains Ground in U.S.

(Continued from Page 55)

ric coding scheme rather than the mosaic system employed by the British and French.

Mosaic systems use read-only terminal memory to store a set of graphics characters. Each character is divided into six light and/or dark cells. The arrangement of light and dark areas differs from character to character, which makes it possible to create a wide variety of shapes on the TV screen by combining characters. To invoke such displays, the videotex center transmits the proper memory addresses to each terminal.

In a geometric system, by comparison, graphics are generated by subroutines stored within the terminal's microprocessor. There is a separate subroutine for each of several basic shapes — that is, line, arc, point — and the display is developed by combining these shapes. The subroutines are invoked by picture description instructions (PDI) transmitted from the videotex center. Each PDI specifies the boundary points of the shape as well as its coloration and shading.

The terminal must have a considerable amount of memory to implement PDI commands. A minimum of 24K bytes is needed to display telidon graphics on a standard TV set vs. 3K bytes to 4K bytes for a Cept terminal with DRCS.

Under pressure from AT&T, the original Telidon standard was scrapped in 1980, when the phone company announced its PLP (Presentation-Level Protocol) specification. This new system borrowed from the Telidon approach, but is not the same.

Also, AT&T added a number of features not found in the original Telidon specification. In addition, PLP is incompatible with the Cept standard. While AT&T argues that American TV sets are incapable of handling 40 by 24, a number of television set manufacturers, including Zenith, have demonstrated that this is incorrect.

PLP PDIs are not the only geometric coding scheme available. Both the British and the Dutch have announced alternative schemes. The Dutch "Vidibord" coding structure has, in particular, drawn attention in Europe as a more efficient coding method. Vidibord uses a differential chain coding scheme requiring considerably less random-access memory and microprocessing than PLP. It may become the European high-level graphics standard.

Selling in Europe

Some manufacturers have already taken advantage of the Cept standard to sell products in Europe. IBM recently entered into a major contract with the German telephone administration to provide computers and software for the German videotex service. Other large contracts are planned to be tendered shortly.

To avoid penalizing American interests and eliminate the conflicts that multiple videotex specifications would precipitate, Cept has proposed that AT&T accept the basic Cept specification for simple graphics sets. In return Cept indicated that its members would adopt the higher level PLP graphics set for geometric coding, which AT&T claimed was necessary for commercialization of videotex. AT&T has not, however, been willing to consider modifications of PLP at this time.

With Continental Telephone supporting the Cept standard and IBM already manufacturing equipment to meet the Cept specification in Europe, American data processors, terminal manufacturers and information providers are faced with the potential added expense of adapting equipment and software to a multiplicity of standards or risk being locked out of a potentially lucrative worldwide market.

Rosch is a Washington, D.C., attorney specializing in telecommunications matters. He serves as communications counsel to British Telecom in the U.S. Previously, Rosch chaired the videotex working party of CCITT and served as attorney/adviser to the international division of the Federal Communications Commission's Common Carrier Bureau.

1985
$32.4 billion

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1980
$12.7 billion

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Replaces V-8500M, MP Systems

NCR Takes Wraps Off Seven Processors

DAYTON, Ohio — NCR Corp. has announced the V-8500 Group II, seven mid-range to upper-end mainframes that run under NCR's Virtual Resource Executive (VRX) operating system. The Group II replaces its V-8500M and MP computer systems.

The firm also announced price cuts on memory prices and several additional disk drive configurations.

Within the Group II, the entry-level, 1M-byte V-8535 II offers about 75% of the performance of the V-8555M, the former entry-level 8500 processor. The V-8535 II costs $59,370 or leases for $2,491/mo on a three-year agreement.

The V-8545 II, featuring between 1M- and 2M bytes of memory, offers about one-third more performance than the V-8535 II, NCR said. With 1M byte of main memory, the mainframe costs $63,240; a three-year lease is priced at $2,648/mo.

The V-8555 II, with 1M- to 4M bytes of main memory, is the smallest of the Group II processors to feature a multiprocessing capability. A 1M-byte system costs $82,000 and leased for $3,481/mo on a three-year lease.

The V-8565 II features a CPU with a 56 nsec cycle time and 2M- to 6M bytes of main memory. It comes with four-way interleaving and features a Virtual Assist Unit to provide enhanced performance. The processor can be upgraded to a multiprocessor.

A 2M-byte V-8565 II costs $139,000 or $5,876/mo on a three-year lease.

The high-end Group II systems — the V-8575 II, the V-8585 II and the V-8595 II — are dyadic systems, comprised of two tightly coupled processors. Each processor has a cycle time of 56 nsec.

All three dyadic systems can be used in multiprocessing applications, NCR noted.

The V-8575 II offers 2M- to 6M bytes of main memory and four-way interleaved memory. It provides about 80% of the performance of NCR's previous dyadic processor, the V-8585M. A 2M-byte V-8575 II costs $178,250 or $7,490/mo on a three-year lease.

The V-8585 II offers performance comparable to the previous V-8585M, according to NCR. Featuring 2M- to 6M bytes of main memory, it includes the Virtual Assist Unit. A 2M-byte system costs $248,000 or $10,425/mo for three years.

The top-of-the-line Group II system, the V-8595 II, offers 20% more processing power than the V-8585 II. It features 4M- to 8M bytes of main memory. With 4M bytes, the processor costs $341,000 or $14,488/mo on a three-year lease.

Peripherals available with the new system employ a bit-serial-link interface, which allows use of a coaxial cable connection. The Group II line will accommodate most peripherals used on the V-8500 systems, NCR said.

Bit-serial-link disk storage offerings have also been expanded to include new 6530 and 6540 combinations. The 6530 features 81M-byte characters of fixed and removable storage and the 6540 has a 540M-byte capacity. The units have a 1.2M byte/sec transfer rate, NCR said.

The NCR systems will be available in the second quarter of 1982, the vendor said.

In its announcement of reductions in memory prices for current systems, NCR said the purchase price for 1M byte of memory, for example, will cost $14,000. It formerly cost $22,300.

In addition, the firm said it plans to make changes in its software pricing policies to make software more attractive to entry-level users, but it did not specify what those changes would be.

NCR is based in Dayton, Ohio 45479.

Relational Data Base Machine Fits VAX

SANTA BARBARA, Calif. — Signal Technology, Inc. (STI) has announced a high-performance hardware and software relational data base management system (DBMS) for Digital Equipment Corp. VAX-11 computers that it said performs three to seven times faster than relational DBMS software packages.

Omnibase was designed for multiuser, multitasking environments in which data base processing consumes a significant amount of system resources. The system — said to be the first to combine user-friendly interface software with a back-end relational data base computer — relies on back-end processor technology with large cache memory and microprocessor control for its relational data base manipulation.

Omnibase

In use, all major data base functions are handled by the Omnibase processor and its attached disks, rather than the 32-bit VAX processor. Omnibase reportedly controls the disk I/O, supervises retention of frequently used data in the machine's cache memory and maximizes the overlap of data base computations, disk seek and I/O transfer times.

The major DBMS features supported are concurrent multiuser processing, transaction management, crash recovery and security controls, an STI spokesman said. The host processor handles only the results of the data base management operations, leaving its resources available to other users.

Initial systems software for Omnibase includes an interactive query language and an embedded query language for major applications development. The former language is a derivative of Quel, a relational system developed at the University of California at Berkeley, the spokesman noted.

In addition, Fortran and Cobol embedded language preprocessors will be provided in Version 1.0 of the DBMS to address both engineering and business needs.

Finally, the Omnibase includes a user-friendly migration facility that reportedly transfers sequential Ascii files into the DBMS to convert existing data bases or conventional file systems.

Omnibase is supported on all VAX/VMS operating systems. The user's computer interfaces to the DBMS processor via a high-speed parallel IEEE-488-to-Unibus link, according to the vendor. The system supports up to 10G bytes of disk storage with storage module disk interfacing.

System prices start at $126,000, which includes a minimum configuration consisting of the Omnibus processor, parallel interface and software. STI is located at 15 W. De la Guerra St., Santa Barbara, Calif. 93101.

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CSP Unveils High-Speed Array Processor

BILLERICA, Mass. — CSP, Inc. has unveiled a high-speed arithmetic array processor for 16- and 32-bit minicomputers that is said to perform 24-million floating-point operation/sec.

The Map-400 system can continuously execute 1,024-point Fast Fourier Transforms at the rate of one every 2.7 msec, a spokesman claimed. All arithmetic is performed in a 32-bit floating-point format that provides a wide dynamic range and reportedly eliminates the scaling problems encountered with fixed-point or block floating-point formats.

Architecturally, the Map-400 is similar to the firm's previously introduced Map-200 and -300 systems. It contains its own internal CPU, multiple independent memory buses, memory speeds from 170- to 500 nsec and the ability to connect to a variety of peripheral devices. However, unlike its predecessors, the Map-400 has twin arithmetic processing units that operate in parallel without cross-interference. This feature is said to provide a two-to-one improvement in processing speed over the Map-300 machine.

The Map processor connects to a variety of minicomputers including Digital Equipment Corp.'s VAX-11 and PDP-11 series, Perkin-Elmer Corp.'s 8/32 and Series 3200, Hewlett-Packard Co.'s 1000 and Data General Corp. Eclipse machines, the spokesman noted.

Prices for the Map-400 processor start at $54,900 for a basic configuration, which includes a 16-slot chassis, 128K bytes of program and an operational software package that includes an array function library.

CSP is located at 400 Linnell Circle, Billerica, Mass. 01821.

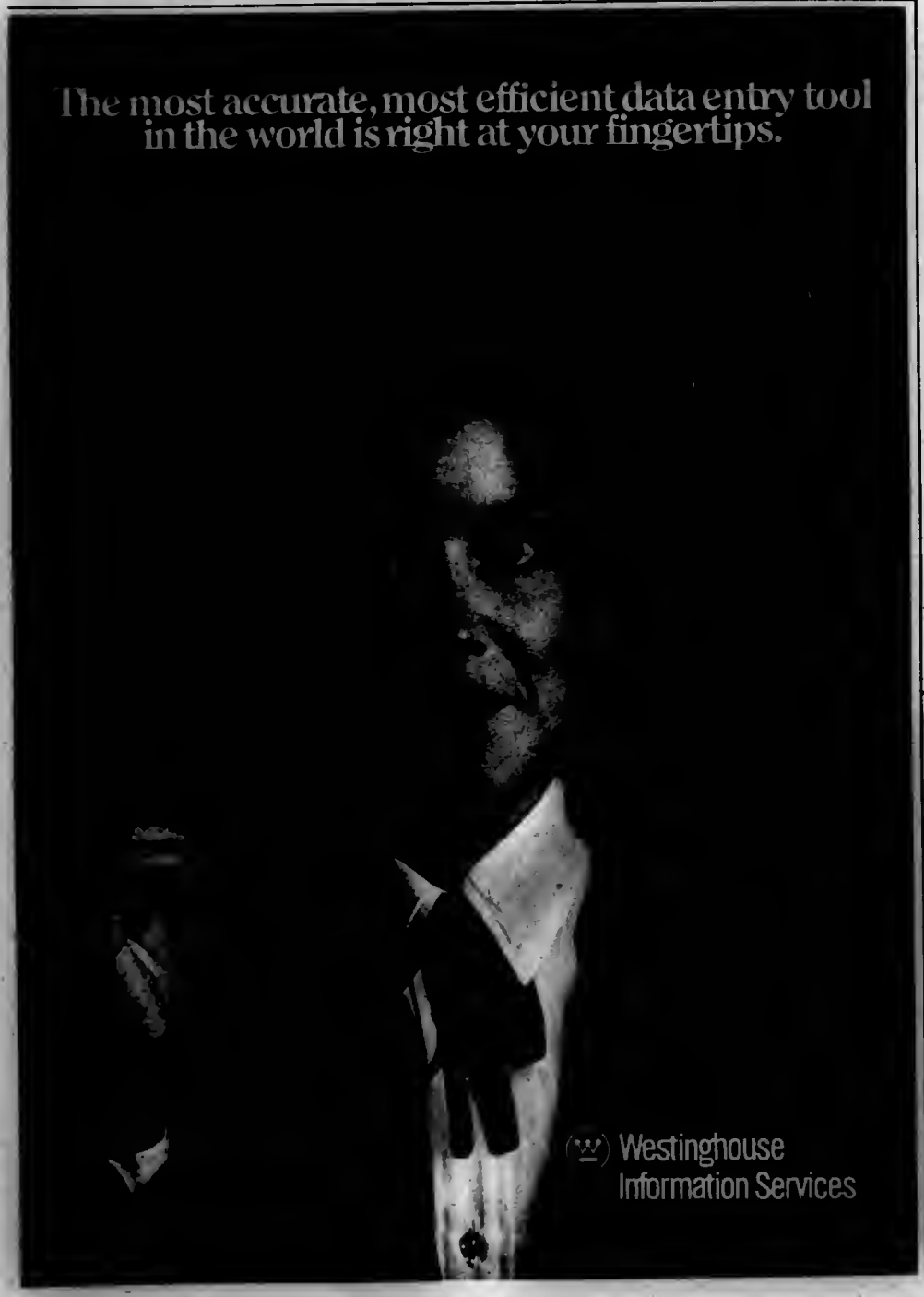
De-Frag Utility Backs Users With NCR Disks

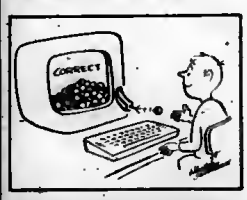
LOS GATOS, Calif. — Micro Management Systems Corp. has unveiled a single-pack compression utility designed to resolve disk fragmentation problems and improve disk space management on NCR Corp. 658 and 6550 disk packs without the dedication of a second drive.

Intended for NCR mainframe users, De-Frag reportedly is copied and compressed onto itself. Contiguous pack file resolution is accomplished and all free space fragments are pooled with a single drive and De-Frag, the vendor said.

The requirement of a second drive to accomplish pack compression runs is eliminated and productive disk drive resource availability is increased, according to the vendor.

De-Frag is available for $2,900 and comes with a 90-day warranty, the vendor said from 117 W. Main St., Los Gatos, Calif. 95030.





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Here's the Complete Computerweek Agenda! Use It to Select Sessions and Plan Your Schedule for March 2-5.

MONDAY, MARCH 1

7:30 - 9:30 p.m. — REGISTRATION

TUESDAY, MARCH 2

7:00 a.m. — REGISTRATION

7:30 - 8:45 a.m. — EARLY BIRD RAP SESSION

R-1 "Computing Power Politics and How To Control It" Chairman: Brad Schultz, Senior Editor, Mgmt. *Computerworld*, Speakers: Professor Rob Kling, Dept. of Info. & Computer Science, University of California, Irvine; Einar Steffereud, President, Network Management Assoc

9:00 - 10:30 a.m.

A-1 "Managing EDP Resources for Greater Productivity" Keynote & Chairman: John Thompson, Vice President, Index Systems

A-2 "New Applications Opportunities in Telecommunications" Chairman: Professor Leonard Kleinrock, University of California at Los Angeles

A-3 "Vendor Markets - 1990" Chairman: Duane Kirkpatrick, Partner, Research, Robertson Coleman Stephens & Woodman; Speakers: Frank Kline, President, Pacific Technology Venture Fund; Robert F. Wickham, Vice President Marketing, Vector Graphics; Paula Lawrence, Manager, Marketing Research, Tymshare

11:00 a.m. - 12:30 p.m.

A-4 "EDP Productivity: Implications for the Manager, DP Practitioner and End User" Chairman: Werner Frank, Executive Vice President, Informatics. Speaker: Dan Merrill, Productivity Mgt. & Ed., Union Carbide

A-5 "Telecommunications Impact: Social, Organizational & Business Implications of Network World" Chairman: Dean Gillette, Executive Director of Corporate Studies, Bell Laboratories

A-6 "Communication Links: Word and Data Processing" Chairman: Alan Negrin, Director of New Product Planning, Harris Corporation, Digital Telephone Div.

12:30 - 2:00 p.m. — LUNCH

Featured Address: " Theory Z' — A Case History in Applying Japanese Management Techniques in an American Organization" Speaker: John Rehfeld, Vice President & General Manager, Toshiba Information Systems; Bradford Spencer, Spencer Assoc.

2:00 - 3:30 p.m.

B-1 "Information Management Planning" Chairman: Clive Finkelstine, Information Methods (USA)

B-2 "Organization Modeling for MIS Departments" Barry Stevens, Vice President, Performance Management Associates

B-3 "IBM Software Strategies For The 1980's" Robert Cook, Vice President, VM Software

B-4 "Application Potential & Planning for Local Networks" Frank Dzubek, President, Communication Network Architects

B-5 "Future of System Network Architecture & Applications Environment" John King, President, K3 Group

B-6 "Future of PCM" Chairman: L. Duane Kirkpatrick, Partner, Robertson Coleman Stephens & Woodman, Speakers: Charles Cornell, Director of Software Support, IPL Systems; Michael Backler, Director of Marketing, Nixdorf Computer; Molly Upton, *EDP Industry Report*

3:45 - 5:15 p.m.

C-1 "Reducing System Development" — Life Cycle Costs Gopal Kapur, President, Kapur & Associates

C-2 "Three Key Processes for Effective DP Management" Chairman: Edward L. Prichard, Director of Management Systems, Institute for Software Engineering

C-3 "Guaranteed Systems: Application Development Through Hardware Concepts" Dan Nolan, Deputy Director, Business Data Processing, Computer Sciences Corporation

C-4 "Ethernet & Base Band Approach vs Broadband & Coax Nets" Frank Dzubek, President, Communication Network Architects

C-5 "Using Non-IBM Terminals in SNA Environments" Saro J. Kar, President, Telecom Computer Technology

C-6 "Impact of Superminis on Business Systems" Chairman: David Anthony, Editor, *Computer System Reports*, Auerbach; Speaker: Edward Churchill, Western Regional Sales Manager, Perkin Elmer Corporation

WEDNESDAY, MARCH 3

7:30 - 8:45 a.m. — EARLY BIRD RAP SESSION

R-2 "Have Users Cut The IBM Apron Strings?" Chairperson: Marcia Blumenthal, Senior Editor, Industry, *Computerworld*

9:00 - 10:30 a.m.

D-1 "Software New Languages & The Application Development Process" Chairman: Martin Goetz, Vice President, Applied Data Research, Speaker Karen Garmater, Manager, Information Resource Center, Lincoln National Life Insurance Company

D-2 "Operating Systems: Outlook for User Independence" Chairman: Ann Lanum, Vice President, Panaphic Systems; Speakers: Robert Marsh, President, Plexus Computer; Edward Churchill, Western Regional Sales Manager, Perkin Elmer Corporation, Jean Yates, Consultant, Gnostic Concepts

8:45 - 9:00 a.m.

Welcome To The OEM Business Forum: Pat McGovern, Chairman, International Data Group

D-3 "The Economic Outlook for The OEM ... Boom or Gloom?" Chairman: Sonny Monsman, Chairman, American Computer Group, Inc.; Speakers: David E. Raphael, Senior Economist, R. Joseph Stockhus, Management Systems Consultant, SRI International

11:00 a.m. - 12:30 p.m.

D-4 "Strategies & Implementation of The Corporate Data Base" Leo Cohen, President, Performance Development Associates

D-5 "Application Packages: An Architectural Assessment Methodology" Stuart Orr, Senior Partner, Orr Associates

D-6 "Japanese Vendors Meet The Press" Chairman: Peter Bochner, Los Angeles Bureau Chief, *Computer Business News*; Speakers: John Rehfeld, Vice President, Information Systems Division, Toshiba; Kay Nishi, Microsoft; Robert J. Cowan, Vice President, Marketing, C. Itoh Electronics, Inc.

12:30 - 2:00 p.m. — LUNCHEON

Featured Address: "Venturing in the 1980: Outlook for New Computer Industry Companies" Speaker: Roy Rogers, Managing General Partner, Hambrecht & Quist

2:00 - 3:30 p.m.

E-1 "Large Processor Architecture Evolution" Chairman: Brian Jeffery, Director, Comp. Industry Research Strategic, Inc.

E-2 "Mainstream Choices in Database" Chairman: Charles Bachman, Vice President, Cullinane Data Base Systems

E-3 "On Line Program Development" Chairman: Jack Ewers, Manager Systems & Programming, Honeywell, Inc.

E-4 "The Vertical Marketing Survival Guide" Chairman: Lawrence D. Dietz, President, The Alec Group San Jose, CA; Speakers: Susan Croft, President, Susan Croft Associates; Dan Cotten, President, Parameter Driven Software

E-5 "Complex Legal Issues Affecting The OEM" Chairman: Richard Raysman, Attorney, Brown & Raysman; Speaker: Peter Vogel, Attorney, Peter S. Vogel P.C.

E-6 " 'Retail' Takes On A New Meaning For The OEM" Chairman: Deborah de Peyster, East Coast Bureau Chief, *Computer Business News*; Speakers: Robert Wickham, Vice President, Marketing, Vector Graphics; Pam Inserra, Vice President, Future Computing; Joel H. Skolnick, Vice President of Finance and General Manager, Computer Store, Inc.

E-7 "Marketing Strategy Tools To Insure Continued High Profit" Speaker: Jack M. Keen, Director, Management Products, Input

3:45 - 5:15 p.m.

F-1 "Survivable Systems" Dr. William H. Highleyman, President, Sombers Associates

F-2 "Database Design for Distributed Systems" Hugh W. Ryan, Arthur Andersen & Company

F-3 "Measuring and Improving Programmer Productivity" Girish Parikh, President, Shetal Enterprises

F-4 "Software For The Vertical Marketplace" Chairman: Warren N. Sargent, Jr., Palo Alto Management Group; Speakers: to be announced

F-5 "Financial, Banks & Insurance Companies . . . An OEM Opportunity" Speakers: Russell H. Dewey, Management Systems Consultant;Robert Jones, Insurance Industry Consultant; Martin Tucher, Director Commercial Banking Department, SRI International

F-6 "The Process Control Industry . . . An OEM Opportunity" Speaker: Patricia Whiting-O'Keefe, Director of Advanced Computer Systems, SRI International

F-7 "Maintaining Your Margins Through Manufactuser Support" Chairman: Ron Mion, Senior Partner, Systems Marketing Associates; Speakers: John Mather, Vice President, Marketing, Point 4, Ron Omohundro, Director, Small Business Systems, THE TRW-FUJITSU COMPANY; John Osborne, Regional Sales Manager, Apple Computer; Mike Seashols, Vice President Marketing, Dynabyte

THURSDAY, MARCH 4

7:30 - 8:45 a.m. — EARLY BIRD RAP SESSION

R-3 "Stop Throwing Work Stations At The User Productivity Problem" Chairman: Steven Schur, President, Mini Max Systems

9:00 - 10:30 a.m.

G-1 "Why Management Hates DP" Walt Lankau, Vice President, Management Decision Systems

G-2 "Personnel Crunch In Data Processing" Harold S. Bott, Partner, Arthur Andersen & Company

G-3 "OEM Technology: An Overview" Chairman: Vic Farmer, Editor, *Computer Business News*; Speakers: Andrew Roman, Consultant, Roman Associates International; Jean Yates, Mgr., Microprocessor/Microcomputer Industry Analyst, Gnostic Concepts; David Mandelkern, Research & Development Planner, Cromemco, Inc.

G-4 "Perspectives of Sales Taxation of Software — The California Experience" Chairman: Rory O'Connor, Senior Editor, Software, *Computer Business News*,; Speakers: Stephen N. Hollman, Attorney at Law, Lakin-Spears; Donald B. Mulvey, President, Computer Services Associates; Susan H. Nycum, Attorney at Law, Gaston Snow & Ely Bartlett; Richard H. Ochsner, Tax Council, California State Board of Equalization

11:00 a.m. - 12:30 p.m.

G-5 "DP — Role In Office Automation: Issues and Solutions" Chairman: Walter Ulrich, President, Walter Ulrich Consulting; Speakers: Robert Evans, Director of MIS, El Paso Co.; Susan Winterteen, Office System Specialist, Bechtel Power Company; Andrew Plebalgs, Manager of Personal Computing, Gulf Canada Ltd.

G-6 "The Programmer Gravy Train Derails" Chairman: Thomas J. Franc, Director of MIS, Bekins, Inc.; Speaker: Charlene Fancil, Consultant, Quality Assurance, Security Pacific National Bank

G-7 "OEM Survival Tools In The 80s" Chairman: Richard Cole, President, Computer Results, Inc.; Speaker: Michael Wood, Partner, CPA firm of Andreoli, Johanson and Wood

2:00 - 3:30 p.m.

H-1 "Planning & Selling Office Automation Projects" Robert S. Elliott, Arthur Andersen & Company

H-2 "Building Careers in DP" Janet Bensu, Janet Bensu Associates

H-3 "Concepts & Trends In Information & Data Resource Management" Dr. Steven H. Spewack, Vice President, Performance Dev. Corp.

H-4 "Software . . . The State Of The Art" Chairman: Ann Winblad, Vice President, Marketing, Open Systems, Inc.; Speakers: Robert D. Brannon, Marketing Manager, OEM Microcomcomputer Systems Operations, Intel Corp.; Andy Johnson-Laird, President, Johnson-Laird, Inc.; Bob Smith, Vice President, Marketing, Forth

H-5 "Push Button Code: Are Program Generators Just Tinkertoys?" Chairman: Chuck Butkus, The Software Factory; Speakers: William R. Stow III, Chief Executive Officer, Relational Systems International; Larry Downing, General Manager, D.J.'Al' Systems Ltd.

H-6 "The Fortune 500 Manufacturers . . . An OEM Opportunity" Chairman: Neil Kleinman, General Manager, Pacific Technology Center, IDC; Speakers: Gerald G. Comisar, Manager, Electronic Systems Laboratory, Technical Research Center, TRW Electronics; Larry Kromling, Director, Product Marketing, General Automation

H-7 "A Guided Tour of Corporate Finance: How to Get the Most Out of Clients, Bankers, Suppliers, Venture Capitalist, & Public Offerings" Chairman: Raymond P. Haas, Attorney, Howard, Rice, Nemerovski, Canady and Pollak; Speakers: Bruce Brough, Hill & Knowlton, Inc.; Roger V. Smith, Imperial Bank; Marshall C. Turner, Jr., Taylor & Turner Assoc., Inc.; Peter Wallace, General Partner, Hambrecht & Quist; Ronald L. Walters, President, COMARC Design Systems

3:45 - 5:15 p.m.

I-1 "Application Production Via Higher Level Languages" Jim Wilcox, Vice President, Hennco

I-2 "Cut Support Costs With Professional Documentation" Stephanie Rosenbaum, President, Tec-Ed

I-3 "The Local Network Avalanche" Chairman: Dr. Harry Saal, President, Nestar; Speakers: Larry Hartge, Vice President, Marketing, 3Com Corp.; Charles C. Bass, Vice President, Ungermann-Bass, Inc.; Mark Stieglitz, Manager, Local Networks, Western Digital; James C. Cogan, Vice President, General Manager, Small Business Computer Division, Datapoint Corp.

I-4 "The Independent Software Business Vendor" Chairman: Rory O'Connor, Senior Editor, Software, *Computer Business News*; Speakers: John Katsaros, Director of Marketing, Digital Research; Judy Ross, Marketing Manager, Intel Corp.; John Smallcomb, Market Segment Manager, Business Applications Systems, Data General

I-5 "The OEM Market Analyst . . . A Look To The Future" Chairman: Tom Casalegno, Vice President/Publisher, *Computer Business News*; Speakers: Neil Kleinman, General Manager, Pacific Technology Center, Inc.; Lawrence W. Roberts, General Partner, Hambrecht & Quist; James N. Porter, President, DISK/TREND, Inc.

I-6 "The European Market . . . How To Break In Successfully" Chairman: Christopher G. Codrington, Managing Director, Interco Business Consultants Ltd.; Speakers: Sergio Ferragut, Cullinane Corporation; H. E. James Finke, President, Commodore International

FRIDAY, MARCH 5

7:30 - 8:45 a.m. — EARLY BIRD RAP SESSION

J-1 "Corporate DP and The Microcomputer Revolution" Harold Kinne, Founder of Halkin Computing Corp.

9:00 - 10:45 a.m.

J-2 Panel: "Personal Computing: The Information Tool of Tomorrow, Today!" Moderator: Maggie Canon, Publisher, *Infoworld*; H.E. James Finke, President and Chief Operating Officer, Commodore International Ltd.; Seymour Rubenstein, President, Micro Pro International; Ed Guge, Director of Merchandising, Radio Shack; Gene Sherman, VP Market Development, Xerox Office Products Division

11:00 - 12:15 a.m.

J-3 "How to Choose a Vendor for Corporate Micro's" Mike Seashols, Vice President of Marketing, Dyna-Byte; Dennis Mandell, President, Online Micro Centers, Inc.

J-4 "Choosing The Right Computer For Your Potential" Thom Hogan, Osborne Computer

J-5 "After Visicalc, What?" Dan Bricklin, Chairman of the Board, Software Arts

12:30 - 2:00 p.m.

Luncheon Address: "The Business Personal Computer: New Users, New Challenges" Ken Parker, President, Executec Software

2:00 - 3:00 p.m.

K-1 "Local Networking of Personal Computers" Bob Metcalfe, 3Com Corporation; Harry Saal, President, Nestar

K-2 "The Executive Workstation" Jean Yates, Gnostic Concepts

K-3 "The Market for Personal Computers" Ed Cherlin, Director of Personal Computer Research, Strategic, Inc.

K-4 "Legal Office Applications" John D. Rome, J.D., Vice President, Informatics Inc

K-5 "The Classroom of the Future" Liza Loop, Technical Coordinator, Computertown, USA

3:10 - 4:10 p.m.

L-1 "Microcomputer Components" Mike Swaine, Senior Editor, *Infoworld*

L-2 "CP/M vs. UNIX" Jean Yates, Gnostic Concepts; John Katsaros, Director of Marketing, Digital Research

L-3 "Microcomputer Software: Problems & Pitfalls of Liscensing" G. Gervaise Davis, III, Senior Partner, Schroeder & Davis Inc.

L-4 "Accounting Applications"

L-5 "Computers & Fun Potential" Nolan Bushnell, Pizzatime Theatre Founder

4:20 - 5:20 p.m.

M-1 "Maintenance & Service Contracts" John Harnett, Director of Business Development, TRW

M-2 "Microcomputers: Lease or Purchase?" Paul Sorenson, Division Vice President, Dearborn Computer Co.

M-3 "Programming Languages: What's Ahead?" Gordon Eubanks, Senior Vice President, Digital Research

M-4 "Graphraphics"

M-5 "User Friendly Documentation" Chairman: John Zussman, Director of Research, Avalanche, Inc.; Jeff Raskin, Manager of Advanced Systems, Apple Computer

*This agenda is subject to change.

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Also Cuts HP 125 Price, Adds Plotter

HP Brings Out Micro for Business Execs

PALO ALTO, Calif. — Hewlett-Packard Co. today unveiled a personal computer system aimed at the business executive. The system features a high-resolution, 80-col text and graphics display and up to 544K bytes of user memory.

At the same time, the firm announced that it has dropped prices by up to 21% on its HP 125 computer and introduced an intelligent small-format pen plotter that can be used with HP, IBM and Apple Computers, Inc. personal and business systems.

A complete system built around the HP 87 includes the HP 7470 graphics plotter (left), dual disk drive and HP 82905B printer.

The HP 87 personal computer has a minimum of 32K bytes of random-access memory (RAM), 48K bytes of Basic language in read-only memory (ROM) and 16K bytes of memory devoted to the system's built-in CRT display. However, the microcomputer's memory can be expanded to 544K bytes by plugging in HP memory modules that come in increments of 32K-, 64K- or 128K bytes, a spokesman said. The maximum total of RAM and ROM is about 600K bytes.

The computer system features a high-resolution, 80-col CRT that can display on command either 24- or 16-lines. The screen, which is optically coated to reduce glare, can present text or graphics. In a graphics mode, the display resolution is 544 by 240 dots.

Unlike other systems in HP's small systems line, the HP 87 has a built-in HP interface bus introduced late last year as a plug-in addition. With the bus, users can attach a variety of peripherals to the micro system ranging from impact and letter-quality printers to the HP 9135 Winchester disk drive that provides the system with 5M bytes of mass storage and 270M bytes of floppy disk backup.

The HP 87 can reportedly collect and analyze information from other personal and larger computers, including HP's 1000 and 3000 models. Data communications is performed via HP's 82950A modem, which connects directly to telephone lines and features storage and automatic number dialing, the spokesman claimed. The computer can also communicate with HP's hand-held computer, the HP 41, when used with the firm's interface loop.

CP/M-Based Software

Using a plug-in intelligent module available this spring, the system can run CP/M-based software programs. Since it uses the Basic language, it can support programs developed on HP's earlier microcomputer-based systems.

The HP 87 replaces the HP 83, which will still be actively marketed in the OEM marketplace, the spokesman noted.

The HP 87 costs $2,495. With 270K- and 540K bytes of floppy disk storage — peckaged as the System 5 and System 10 — the computer costs $3,995 and $4,695, respectively. A system featuring HP's high-capacity hard disk, called the HP 87 System 30, costs $7,995.

Plug-in memory modules are priced from $295 for the 32K-byte model to $795 for the 128K-byte version, while the CP/M module costs $495.

The microprocessor-based Model 7470 pen plotter can produce both hard copy for reports and overhead transparencies for presentations. The device operates by moving both the paper and the unit's pens simultaneously — reportedly eliminating the need for stepper motors, peper sensors or cooling fans.

Intelligence features of the plotter include: built-in character generation with European character set, vestor plotting and internal linetypes. The unit can also automatically reconfigure or scale a graphics or character to fit within a certain area — condensing, expanding, enlarging or reducing images and characters.

The plotter has two-letter graphics-language interface instructions stored in an 8K-byte ROM. More than 40 individual instructions — from plot designs to pen commands — can be accessed.

The HP 7470 accepts typewriter-size of ISO A4-size peper and automatically uncaps and caps its two pens to prevent dry-out.

(Continued on Page 66)

DG Commercial Systems Gain Tape, Disk Drives

WESTBORO, Mass. — Data General Corp. has added a magnetic tape drive and two Winchester disk subsystems to its Commercial Systems line of processors.

The Model 6123 tape drive is a backup device to the 12.5M-byte and 25M-byte disk drives available on the Commercial Systems CS/10 Modules C1 and C3. The unit features a recording density of 1,600 bit/in. with a storage capacity of 27.3M byte/real.

The tape drive has a data transfer rate of up to 48K byte/sec, the vendor said. It costs $6,600.

In addition, DG announced 73M-byte and 147M-byte disk drives for its CS/50 and CS/70 systems. On a CS/50 or CS/70 packaged system basis, the 73M-byte disk provides 46% more capacity and the 147M-byte drive increases storage capacity 53%, the vendor said.

Installed CS/40, CS/50, CS/60 and CS/70 systems can be upgraded to support the new disks. Both drives are supported by Interactive Cobol and Business Basic, DG said.

The 73M-byte subsystem costs $18,000. As an add-on subsystem, the unit costs $14,500. The 147M-byte subsystem costs $24,000 or $20,500 as an add-on, the vendor said from 400 Computer Drive, Westboro, Mass. 01580.

To Business Systems Line

Basic Four Adds Two Small Systems

TUSTIN, Calif. — The Basic Four Information Systems Division of Management Assistance, Inc. has added two systems to its small business computer line that feature up to 512K bytes of memory and can handle up to 32 CRT terminals.

The System 310 consists of 96K bytes of memory, 40M bytes of Winchester disk storage, a 150 line/min printer, a 1,600 bit/in. magnetic tape drive and two CRT terminals. The system can be expanded to include up to 256K bytes of memory, 120M bytes of disk storage, two 600 line/min printers, 16 CRT terminals and up to four mutlifunction terminals that are geared for word processing.

The System 710 replaces both the Systems 610 and 730 and in its minimum configuration includes 96K bytes of memory, two 35M-byte removable disk drives, one CRT terminal and a 300 line/min printer. Its maximum configuration has 512K bytes of memory, 600M bytes of disk storage, 32 CRT terminals, four multifunction terminals and two parallel printers.

The basic System 310 costs $55,900 and will be available this May. The System 710 is priced from $69,100 and is available immediately, a spokeswoman said. Basic Four is located at 14101 Myford Road, Tustin, Calif. 92680.

Desktop Processor Features Synthetic Voice Output

FOREST HILL, Md. — Maryland Computer Services, Inc. has announced the Information Thru Speech system, a desktop processor with synthetic voice output capabilities.

Based on the Hewlett-Packard Co. HP-125 desktop processor, the unit was designed for "eyes busy/hands busy" applications. Data displayed on the screen can be reproduced vocally using a synthetic voice, the vendor said.

Other features include an unlimited English vocabulary; CP/M competibility; support for Basic, Pascal, Cobol and Fortran; variable pitch, tone and volume; an adjustable speech rate from 47- to 720 word/min.; and disk storage of 250K- to 4.6M bytes, the vendor said.

A 250K-byte system costs $7,995 and a 4.6M-byte system costs $11,995, the vendor said from 2010 Rock Spring Road, Forest Hill, Md. 21050.

Mini Bits

Wicat Micro Receives Multiuser Capability

OREM, Utah — Wicat Systems, Inc. has announced a multiuser capability for its S-150 microcomputer that can support up to six users with memory configurations ranging from 256K bytes to 1M bytes.

The S-150 employs the Motorola Corp. 68000 microprocessor in a six-slot IEEE 796 Multibus chassis. It comes in two standard configurations: the 150-3 WS and the 150-6 WS.

The standard 150-3 WS is equipped with 256K bytes of random-access memory, a 10M-byte Winchester disk drive, 960K bytes of floppy disk backup, two RS-232C ports, one parallel port, an integrated CRT and detachable keyboard. It costs $10,850, the vendor said.

The 150-6 WS is similar but has 512K bytes of memory, five RS-232C ports, one parallel port and costs $12,850.

Wicat is at 1875 S. State Road, Orem, Utah 84057.

Graphics Matrix Printer Works at 120 Char./Sec

HUDSON, N.H. — A 120 char./sec graphics dot matrix printer is available from Centronics Data Computer Corp.

The Model 122 reportedly provides the standard features of an industrial grade, 132-col printer coupled with standard pin-addressable graphics for business processing or design-graphics applications, according to the vendor.

The bidirectional printer is software-compatible with the Centronics Model 739 and features selectable forms length, selectable line/in. and seven resident international character sets.

The printer costs $1,195 from Centronics Data Computer Corp., Hudson, N.H. 03051.

Tape Cartridge Backup Unveiled for IBM Series/1

WHARTON, N.J. — A tape cartridge system designed as backup for IBM Series/1 users has been unveiled by ADL Enterprises, Inc.

The 969 Tape Cartridge System reportedly can record up to 67M bytes of user data on a single 4-in. by 6-in. tape cartridge, making it possible to back up the contents of an IBM 4963 or 4964 disk unit on a single tape.

The unit can also be used as an interactive system device for the storage of large volumes of data, the vendor said.

Consisting of a cartridge drive, formatter and Series/1 attachment cord, the unit costs $6,800 and will be available in May from the firm at Richard Mine Road, Wharton, N.J. 07885.

Model 650A Tape Drive Updates Qantex 650

HAUPPAGE, N.Y. — The Qantex Division of North Atlantic Industries, Inc. has announced the Model 650A tape drive. The unit replaces the firm's Model 650 at no extra cost.

The Model 650A operates over a wider voltage range without compromising the original design specifications, the vendor said.

Data can be written at a density of 1,600 bit/in. on 3M Corp.'a 300A data cartridge, according to the vendor. It meets the Ansi and Ecma specifications for information exchange, the vendor said.

The drives cost $1,231, Qantex said from 60 Plant Ave., Hauppauge, N.Y., 11787.

Business Execs Get HP Micro

(Continued from Page 65)

Other features include a damping mechanism to protect the pens from impact damage, a variable movement velocity and a "view" key that stops plotting and transports the paper away from the drive mechanism for review.

The pen plotter costs $1,550.

Capping off its announcements, HP cut prices on its HP 125 systems. The HP 125 Model 10 is now $4,950, down 21% from $6,250; and the HP 125 Model 20 has been reduced from $10,580 to $8,250. Both systems were introduced about six months ago.

Additional information on the HP computer and other products can be obtained from local HP sales offices.

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Industry Experts: Local-Area Nets, Voice/Data PBXs To Coexist For Near Future

By Bruce Hoard
CW Staff

Local-area networks and voice/data private branch exchanges (PBX) will coexist and even complement each other in office environments for the near future, according to industry experts interviewed last week.

However, their opinions were more fragmented over the baseband vs. broadband battle raging around local-area networks.

The high data transmission rates of the local-area network far exceed those of the voice/data PBX, while the voice-switching capabilities of the voice/data PBX are vastly superior to anything a local-area network can offer, according to David Terrie, manager of International Data Corp.'s (IDC) Office Automation Services.

"I don't think either one of them is going to dominate," he said.

The local net excels in situations where certain types of message traffic are being communicated between CPUs or when relatively dumb terminals are performing interactive tasks, he explained.

For instance, Wang Laboratories, Inc. can run its shared-logic terminals over the Wangband of its Wangnet local-area network because the transmission speeds are so high "it is effectively just like a clustered system," he noted.

Terrie cited the compatibility of Datapoint Corp.'s Arcnet local-area network and its ISX voice/data PBX as a good example of the two technologies being used in unison.

He said the "sound and fury" surrounding the baseband/broadband issue is distracting people from the

(Continued on Page 70)

Why No Revolution?

MIC Report Explores OA Impediments

By Bruce Hoard
CW Staff

CHERRY HILL, N.J. — The lack of skilled personnel, continual changes in technology and the difficulty in integrating various technologies are three prime reasons why there has not been a revolution in office automation technology, a recent report contends.

"The Status of the Automated Office," published by Management Information Corp., explains those impediments and discusses major office functions and how they are currently performed.

The lack of skilled office automation personnel is largely attributable to the lack of people with experience in the "total realm" of office automation, the report notes. People with individual experience in DP, word processing and telecommunications are much more easily found.

"Virtually every month a new product is introduced in each area of technology," the report says. That constant onslaught of technological change makes life difficult for planners and makes organizations wary of doing too much too soon, as today's state-of-the-art is tomorrow's obsolescence.

The lack of compatibility among various vendors' devices is stultifying to overall office automation. Specific problem areas include varying transmission protocols and speeds.

"Machine dictation" is the first major office function listed by the report. The units that are used to capture dictation are becoming smaller and smaller, leading to increased convenience. Some are even pocket-size. The Wang Laboratories, Inc. Alliance system is called the closest commercial offering to automated dictation.

Optical character recognition (OCR) is frequently used with input devices in the word processing center. It can be used to feed documents into an electronic mail or electronic filing system. OCR machines are still too expensive to have each office enter its own mail into the system, the report declares.

Voice input and response has interested several vendors. IBM has a typewriter which can type from spoken letters. Maryland Computer Services offers a product called Total Talk, which is a modified Hewlett-Packard Co. 2621A that can spell and talk. The Fidelity System developed by Vertex Corp. of Bedford, Mass., can recognize words spoken by both sexes and interpret regional accents.

Word processing has become less expensive as the price of hardware has gone down. Many vendors have recently introduced word processors cost-

(Continued on Page 70)

Electronic Mail Vendors

The following is a list of electronic mail vendors and packages from the Management Information Corp. report, "The Status of the Automated Office":

- BBN Information Management Corp.: *Infomail*
- Computer Corp. of America: *Comet*
- Computer Projects, Inc.: *Fox*
- Cybertex Computer Products: *Cybergram*
- Datapoint Corp.: *EMS*
- Microcom, Inc.: *Microcourier*
- Nestar Systems: *Messenger*
- On-line Software International: *Omnicom*
- Prime Computer, Inc.: *Integrated Software*
- Wang Laboratories, Inc.: *Mailway*
- Interactive Systems Corp.: *Inmail*
- Systar Corp.: *Message/f*
- STSC, Inc.: *Mailbox*

Software Combines DP, WP

'Wordwright' Runs Under CTS-300

COSTA MESA, Calif. — California Systems Associates is offering its Wordwright word and data processing software in a version compatible with Digital Equipment Corp.'s CTS-300.

The bundled package — which includes a screen and text editor, data base management system (DBMS) and a report generator — currently operates under DEC RT-11, TSX and TSX-Plus on the low- to medium-range PDP-11 equipment.

The enhanced version of Wordwright takes advantage of the advanced video option of DEC's VT100 CRT terminal and allows on-screen boldfacing, underlines and 132/80-col operation.

Datamanage, the DBMS, uses a fast keyed Isam file structure with up to 10 keyed fields per record. A standard format dictionary file is used to provide compatibility between multiple data bases for other software systems.

Using this method, Datamanage can operate with existing data bases and join multiple data bases.

Reportwright and Datamerge are the report generation and list processing systems of the package. Reports can be canned for standard requirements or produced directly for special needs.

Twenty levels of sorting, automatic subtotaling to five levels and runtime conditional record selection are standard features.

The unbundled Wordwright, Datamanage, Reportwright and Datamerge packages cost $500 to $800 each. The complete package costs between $1,400 and $2,400.

California Systems in located at Suite 4, 2845 Mesa Verde Drive E., Costa Mesa, Calif. 92626.

Xerox Unveils WP Packages For Its 860 System Line

DALLAS — Xerox Corp. has unveiled two word processing software packages for its 860 information processing system.

The scientific equations package allows creation, display, updating and printing of scientific symbols within text documents. Alpha and scientific character sets are simultaneously displayed and, along with text, can be edited in one operation. Equations can be moved within a document or to another document.

The word processing sort software facilitates arranging lists alphabetically or developing tables in ascending or descending order within any word processing document, using standard commands.

One-time license fees are $500 for the scientific equations and $300 for the word processing sort packages, Xerox said from 1341 W. Mockingbird Lane, Dallas, Texas 75247.

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CW 3

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Report: Skilled Labor Shortage Slowing OA

(Continued from Page 67)

ing around $8,000 that are not "full-feature" machines but are upgradable.

"The line between word processing and data processing has continued to blur," the report observes, adding several processing systems can run the CP/M operating system. Other DP-like features word processors can now do include search and replace, records processing, arithmetic functions, sorting and decision processing.

Facsimile units have a "unique niche in the office environment," because they can send exact images as well as text. As their prices decline, their uses will become increasingly decentralized.

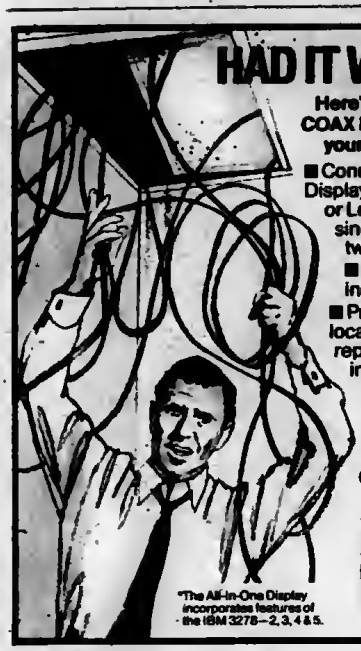
High-memory capacity disk storage devices are the driving force behind electronic filing. More systems are being designed to accommodate the need for shared filing. Electronic filing and retrieval systems are usually part of a total office automation software package.

Electronic messaging/electronic mail have seen several recent developments, according to the report. For instance, Westinghouse Corp. has a system in use that transfers fully formatted documents.

Other office functions included in the 25-page report are micrographics, reprographics, addressing and mailing systems, scheduling and calendaring, communications, interfaces, telephone systems, voice technology, fiber optics, satellites, networks, electronic meetings and videotex.

The report is available as part of a 12-issue yearly subscription costing $295, MIC said.

MIC is located at 140 Barclay Center, Cherry Hill, N.J. 08034.



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Local Nets, PBXs to Coexist

(Continued from Page 67)

more important issue of applications. "The way to look at the effectiveness of the network is from the applications back end," he claimed, adding "very few" users are interested in the video and real-time voice capabilities available with broadband local nets.

Kenneth Thurber, communications consultant and president of Architecture Technology Corp., said, "I don't see a dominance," when asked about the future of local nets and voice/data PBXs. He gave the PBXs an edge in future battles.

"If you look at the installed base of equipment that could be easily converted or the incremental costs to change to a local-area network, the PBX-based approaches have a lot going for them," he declared.

Like Terrie, he cited the Datapoint Arcnet-ISX compatibility and said such a two-pronged communications approach will become the norm for large organizations.

Thurber did not feel the baseband/broadband battle is over yet, calling it "a not very relevant argument." The first thing to do is assess requirements when shopping for a local-area network, the president said.

"If you don't have any video and you don't have any voice, then a baseband system is probably clearly acceptable to you," he commented. How many people really want voice and video capabilities? "We've seen quite a few," he added.

As an example, he mentioned companies with closed-circuit television security systems that might want to add data and voice capabilities.

James Cockrum, director of the Telecommunications Industry Service for Dataquest, Inc., expressed little doubt about the future compatibility of local-area networks and voice/data PBXs. "I think they have to exist aide by side," he observed.

Asked if he foresaw one of the two technologies crowding the other out of the office, he replied, "I don't see that happening within the next five years."

He cited the PBX's ability to perform "the gateway function" required to get to either another network or another building that may not be hooked to a network.

Cockrum did not feel the baseband/broadband controversy was over. He indicated a preference for broadband systems, asserting that the functions performed by a baseband net can be included in one of many channels available on a broadband version.

Intecom, Inc., maker of the IBX voice/data PBX, is one of several voice/data PBX manufacturers to license the specifications for Xerox Corp.'s Ethernet baseband local-area network recently.

While formally declining to announce an Arcnet-ISX-like marriage in its family, Thomas H. Aschenbrenner, Intecom senior vice-president of marketing, made little attempt to deny a courtship is in the works.

"Unfortunately, the position our company has is we don't talk about products under development," he said.

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Commerce Sees DP Sales Up 15% in '82

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — U.S. computer industry sales should increase by 15% this year, according to the U.S. Department of Commerce, which is counting on economic recovery and falling interest rates to maintain the industry's historic good health.

In its annual *U.S. Industrial Outlook*, the department reported U.S. suppliers of DP goods and services had sales of approximately $30.5 billion in 1982, up almost $5 billion over the previous year. Commerce said several segments of the industry, including personal compoters, disk storage and graphics terminals, enjoyed high rates of growth despite a soft economy, high interest rates and a strong U.S. dollar overseas.

For the coming year, the report said hardware and software suppliers should benefit from the research and development and accelerated depreciation provisions of last year's Economic Recovery Tax Act. The depreciation provision should lead to increased demand for industry goods and aid computer manufacturers installing capital equipment.

But, Commerce added, "with weak 1982 recoveries forecast for the major European economies, the growth rate for U.S. computer exports will probably not return to the high level of 1980, but should increase 30% during the year, bringing 1982 total value to $11.5 billion in current dollars."

Imports will probably grow also, especially from Japan, as the domestic demand for hardware and software increases, Commerce indicated. Exports for 1981 were put at $8.8 billion (up 23.3%, but well below the 39% jump between 1979 and 1980); imports totalled $1.6 billion for the year, an increase of 38%.

Material Costs Down

In general, the department said of 1981, costs of materials and components dropped in many cases for the industry because of reduced inventories. However, the cost of labor continued to rise, with graduates commanding an average starting salary of $20,000, up 7% from 1980 and far exceeding the $13,000 average for liberal arts graduates last year.

Last year also saw continuation of industry price hikes, up 5% to 10% over 1980, with lease and rental rate increases set proportionately higher than purchase rate hikes in order to improve short-term revenues.

In terms of industry investment, Commerce said the top eight U.S. computer firms spent $3.5 billion on plants and equipment in 1980, a 36% increase over 1979. "A high proportion of these expenditures paid for the expansion for internal semiconductor production capacity and of computer manufacturing facilities," the report said.

(Continued on Page 72)

Magnuson to Get $3 Million; Bank Agrees to Restructure Debt

SAN JOSE, Calif. — Magnuson Computer Systems, Inc. has reached agreements in principle for a $3 million investment in the company by a group of private investors and for the restructuring of its debt with the Bank of America.

The agreement with the bank is subject to the firm's obtaining $5 million in additional investment. If these funds are raised, the bank has agreed to extend the maturity of outstanding loans for a period of two years and to reduce interest on the debt to 9%.

It is anticipated that investors will purchase two-year promissory notes. Warrants to purchase common shares will be issued to the investors and the bank to be exercised at a price of $1.17/share. Hambrecht and Quist is leading the new investment.

Trouble at Magnuson surfaced last month after its bid for acquisition by Storage Technology Corp. fell through [CW, Feb. 8]. Magnuson revealed it would face a $10 million fourth-quarter loss on revenues of $5 million. Most of the loss was attributed to write-offs the firm had to take on equipment that malfunctioned and for missing inventory.

In announcing its attempt to refinance, Magnuson also disclosed that its fourth-quarter loss would be larger than the $10 million previously announced. Officials at the firm estimated that the loss may approach $20 million.

Besides the $3 million in new financing already proposed, Magnuson is seeking additional investors.

Sperry to Take New Approach to Software Research

By Robert Batt
CW West Coast Bureau

BLUEBELL, Pa. — Sperry Univac is disbanding its Software Research Group, based here, and replacing it with a System and Software Research Group in an attempt to provide a more coordinated approach to its systems research and design.

The new group's emphasis will be on software research that directly attacks the problem of conserving programmer manpower, according to a Univac spokesman. There will also be more emphasis on machine-independent software to give the software a longer life.

The company claimed the changes, scheduled to take place on April 1, are not a result of budget cuts or the economic situation and added that fewer than 10 people will be affected by the reorganization. These people will be offered jobs in other parts of the corporation, the spokesman added.

In addition to its emphasis on machine-independent software, the new software organization will also place greater stress on producing industrial-quality software. According to the company, current software technology is primitive in terms of providing the tools required by users, so Sperry intends to put much more work than it has done into system-control software. The company also plans to do more work in the area of operating systems. These need to be enlarged, the spokesman said, because of developments in communications and applications programs.

Top Quarterback in the EDP

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Commerce: DP Sales to Grow 15% in '82

(Continued from Page 71)

Funds also went for plant automation, reflecting the concern of many of these firms over the impact of profitability of rising labor costs," the study said.

Total R&D expenditures of a sample of 20 major computer firms rose 19% last year to $3.4 billion. This increase was "well above" the 16.4% increase for total U.S. manufacturing R&D outlays, the department noted.

Turning to personal computers, the report estimated 800,000 units in the under-$10,000 price range were sold worldwide in 1981, with a total value of $1.6 billion. The U.S. market accounted for 75% of those sales, with the rest going to Japan and Europe.

This increase was fueled by expanding availability of software packages for small systems, according to Commerce, which estimated that sales of software by manufacturers and independent software houses reached nearly $200 million in 1981, double the previous year's total.

Commerce noted the rising U.S. market penetration of Japanese small systems and said Japanese exports to the U.S. in this category should reach 30,000 units, worth more than $40 million, by the close of the fiscal year ending March 31, 1982.

Updating its annual long-term forecast, Commerce said the value of computer industry shipments should increase an average of 15% a year through 1986, after adjusting for inflation. Exports should return to the large growth rates experienced in the late 1970s, the report added.

Commerce predicted the computer manufacturing industry will be "one of the fastest growing employment sectors in the U.S. economy in the 1980s." Employment in the industry should increase by an average of 4.3% annually, reaching 552,000 workers by 1990. "This rate of growth will exceed the annual increase projected for all manufacturing employment by a factor of four," the department said.

The computer services industry should continue to enjoy revenue gains equal to the approximately 20% increases of 1980 and 1981, when revenues were an estimated $14.9 billion and $18 billion, respectively.

Commerce cautioned, however, that the services industry could be restrained in the future by increasing software taxation — now in place in more than 30 states and under consideration in several foreign countries — and, possible restrictions by some nations on transborder data flow.

Contracts & Pacts

Computer & Communications Technology Corp.'s Data Peripherals subsidiary has signed orders exceeding $10 million for its Winchester disk drives and related equipment.

Micro Peripherals, Inc. has been awarded a $2.6 million contract by Direct, inc. to provide 5¼-in. flexible disk drives

Micropolis Corp. has signed an exclusive distribution agreement with P.H.I. Data S.A. of Brussels, Belgium, for Micropolis' complete product line of floppy disks and disk drives. P.H.I. will market the products in Belgium, the Netherlands and Luxembourg.

Century Data Systems, Inc. has signed a contract to provide Trident removable-pack disk drives to Geo-Search Seismic Processors of Midland, Texas.

Telesensory Systems, Inc. has entered into a contract valued at over $2 million with Western Electric Co. for the production of special terminals that will enable the blind to handle a telephone operator station.

Hamilton/Avnet Electronics, Inc. has placed a one-million-piece 2764 erasable-programmable read-only memory order with Intel Corp.

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Target: Corporate Users

Micro Boom Spawning New Breed of Dealers

By Robert Batt
CW West Coast Bureau

The concept of putting a workstation on every manager's desk is giving rise to a new breed of personal computer dealers whose job is to service this technology explosion.

Because the traditional hobbyist retail store is not equipped to support microcomputers within the nation's large corporations, DP managers are beginning to receive visits from a nationwide network of dealers specializing in specific micro products and offering extensive training, service and support facilities.

Take Morris Decision Systems, Inc. for instance. This Manhattan-based dealer offers some of New York's largest financial and manufacturing organizations consulting on equipment configuration, equipment servicing and client training and education.

Beta Test Site

The company is an authorized service center for Apple Computer, Inc., Qume Corp. and Integral Data Systems, Inc., among others. It also is a servicing agent for Nestar Systems, Inc., the Palo Alto, Calif.-based supplier of local-area networks, and has been selected as a beta test site by software developers such as Visicorp, the publishers of Visicalc, and Desktop Software, developers of the NPL data base management system.

"We are selling high-technology capital goods," Tony Morris, company president, said. "Our target market is the manager or professional engaged in analysis or decision making, who to date has had little automated support in carrying out those activities for which he or she is personally responsible."

Companies like Morris Decision Systems do not rely on sales through their retail outlets. In fact, they fight shy of describing their sales centers as "stores."

Tony Morris explained that "ultimately, we are talking about sales of systems. For example, we are committed to local-area networks, so large dollar amounts are involved. Managers are not going to buy from retail stores; we are going to have to go to them."

Dealership Attractions

One of the attractions of such dealerships to the department managers of large corporations is the service and support facilities the dealerships provide. Apple dealers such as Compugroup, based in Toronto, provide introductory seminars, computer classrooms and testing facilities for applications software as part of their sales package. Equipment is also available for rental.

The Canadian company numbers among its customer base Memorex Corp. of Canada, which has installed 21 computers in its Service Division and has reputedly made huge gains in productivity as a result.

"Backup and professionalism is important here. We are selling credibility, and clients want someone they can depend on. They do not trust the retail store to supply the necessary backup, and so they come to dealers like ourselves," Howard Cracower, Compugroup's president, said.

One of the things that supplies this credibility is the personnel employed by the various dealerships. Of the principal employees at Morris Decision Systems, for example, six have MBA degrees, most of them from Stanford University.

This type of background is a major selling point when it comes to dealing with mid-level managers. Again, "The No. 1 criterion is that they have an understanding of the business world," Cracower said. "They need to have highly developed communication skills. After all, the client is making an investment which he needs to cost justify and so you need to be able to speak his language."

Some companies, such as Office Technology, Inc. (OTI) in Neenah, Wis., insist on specialist backgrounds for their staff, such as familiarity with accounting. According to Tom Hirschberg, OTI's educational coordinator, financial departments and institutions in particular are looking towards the personal computer to increase their productivity.

"You've got to be a total support dealership to succeed in this market. Software support in particular is going to be much in demand and on-site service is going to be an absolute necessity," he added.

Supplying Growing Mart

Some dealerships are going to sophisticated lengths to supply what they think will be needed in a growing marketplace. Morris Decision Systems, for instance, commits a substantial amount of money to research. It is one of the few dealerships with local-area networks (Nestar and Corvus Omninet) installed for applications evaluation.

In particular, the company is looking to make big strides in the financial and information services sector. Specific markets include securities research, portfolio management, corporate and venture financing, management consulting and corporate planning.

"Our goal is to bring a realistic business strategy to bear in a rigorous, but enlightened, way in the most concentrated potential market for technology-based problem solving and analysis," Tony Morris said.

How such a strategy is to be implemented will vary from company to company. Morris Decision Systems, for example, has stated that its long-term goal is to build a complete line of state-of-the-art products and services, "which fully reflect the managerial or professional user's need to capture, process, display and disseminate information on a timely basis."

Other companies, such as Compugroup and The Computerplace, Inc. of Worcester, Mass., believe such an approach to be ill-founded. Their philosophy is that service and support are vital and so the dealer of tomorrow cannot afford to support a large line of products. As Cracower put it: "If you are going to have to stay on top of the product, you are going to have to specialize."

Time will tell who is right.

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Datapoint Stock Tumbles 30% on Wall Street

SAN ANTONIO, Texas — Datapoint Corp.'a recently announced second-quarter financial performance caused activity on Wall Street last month that saw the price of the firm's stock plummet by more than 30%.

The activity was sparked in January, when Datapoint forecast that its second-quarter earnings would be 66 cents per share. However, per share earnings for the quarter ended up at 55 cents, a drop from the 60 cents per share earned in the same quarter last year.

This is reportedly the first quarterly earnings decline Datapoint has experienced in several years.

At an analysts' meeting held last month, Datapoint President and Chief Executive Officer Harold E. O'Kelley said the firm'a backlog of orders was down from the prior quarter.

In addition, he reported the company had chosen to delete from the backlog certain previously booked orders that no longer look solid in light of the current economic climate.

At the same time it announced its quarterly results, Datapoint reported several executive changes and said it had completed the acquisition of related assets and distribution rights of its distributors in Sweden and Finland.

For its second quarter, Datapoint reported sales of $141.7 million, up from $112.8 million in the prior year. Earnings totaled $11.2 million or 55 cents per share, down from $12.2 million or 60 cents per share in the same quarter a year ago.

For its first six months, the firm reported revenues of $268.2 million and earnings of just over $22 million or $1.08 per share. In the first half of 1981, the company's revenues had totaled $211.5 million and earnings were $22.4 million or $1.16 per share.

Mergers & Acquisitions

Numonics Corp. has purchased **Mauro Engineering** and its line of plotters. The terms of the merger were not disclosed.

NLT Computer Services Corp. has acquired **Sun Information Services Co.'s Micrographic Division.**

Nabu Manufacturing Corp. of Ottawa, Canada, will acquire **Volker Craig Ltd.** of Waterloo, Ont., for an undisclosed amount of cash and stock.

Dyatron Corp. will sell its Human Resource Information Systems business located in Huntsville, Ala., to **McCormack & Dodge Corp.**

Telxon Corp. has acquired its German distributor of five years, **Telxon GmbH** of Hamburg, Germany.

Management Systems of Wasau, Inc., a subsidiary of Wasau Insurance Companies, has acquired **Medical Computer Systems, Inc.**

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Memorex Head Resigns Post

SANTA CLARA, Calif. — Charles S. Strauch resigned as president and chief operating officer of Memorex Corp. late last month. However, he will remain with the firm for an unspecified period.

Strauch's responsibilities will be assumed by C.W. Spangle, the firm's chairman and chief executive officer.

In announcing his resignation, Strauch said now that Memorex is a subsidiary of Burroughs Corp. the firm does not need two top executive officers.

Other Moves

• William R. Orthwein has retired as chairman of McDonnell Douglas Automation Co.

• James Hill has been elected chief executive officer at Denelcor, Inc.

• Harold Shattuck has been named president and chief executive officer at System Industries, Inc.

• Roger Davis has been named president of Cambar Business Systems, Inc.

• John Nolting has been elected president of Dataterm, a subsidiary of Datatech Services, Inc.

• Don Shaw has been promoted to vice-president of worldwide distribution at Durango Systems, Inc.

• Robert Deffeyes has been named a vice-president of Carlisle Corp., the parent company of Graham Magnetics, Inc.

• Dan Jakle has been named vice-president of U.S. sales at California Computer Products, Inc.

Executive Corner

• Sun Information Services Co. has appointed Thomas Fitzpatrick and Michael Reagoso vice-presidents of marketing and data services, respectively.

• David Banks has been appointed vice-president of marketing at Object Recognition Systems, Inc.

• George Pratl has been named vice-president of corporate planning at Systems & Programming Resources, Inc.

• Kenneth W. Simonds has been promoted to the newly created position of executive vice-president at Amdahl Corp.

• Systems Integrators, Inc. has appointed Alden Edwards vice-president of sales.

• Paul Niquette has been appointed vice-president of engineering at the Naked Mini Division of Computer Automation, Inc.

• Recent changes at Codex Corp. include the following: Don Pierce, vice-president of customer service; Richard Kendrick, vice-president and general manager of distribution operations; Gerald Murray Jr., vice-president and general manager of the International Division of Motorola's Information Systems Group (Codex is a subsidiary of Motorola, Inc.); Dr. G. David Forney Jr., vice-president and director of technology and planning at Motorola's new Information Systems Group; Rolf D. Soderstrom, senior vice-president and general manager of product operations; and John Lockitt, vice-president of modulation products.

• Mohawk Data Sciences has appointed J. W. Skibinski to the position of senior vice-president in charge of product development for the Systems Division.

• Robert Trost has been named vice-president of finance at Capro, Inc.

Expansions

Micom Systems, Inc. has just concluded its move to new corporate headquarters at 20151 Nordoff St., in Chatsworth, Calif. 91311.

Lortec Power Systems, Inc. has increased its production space by 50% with a recent expansion of its facilities in North Ridgeville, Ohio.

General Datacomm Industries, Inc. will begin expansion into its 207,000 sq-ft manufacturing facility in Waterbury, Conn., in mid-February.

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Modcomp, CDC Ink Technology Pact

FORT LAUDERDALE, Fla. — Modular Computer Systems, Inc. (Modcomp) has acquired rights to certain computer technology from Control Data Corp. in return for issuing the Minneapolis mainframer 90,000 shares of Modcomp stock.

The technology acquired is reportedly e 32-bit redundant processor developed by CDC for use in military and aerospace epplications. Modcomp said it will enhance and commercialize the technology for its markets.

In addition to that technology pact, Modcomp and CDC have also concluded a consulting agreement and a software license agreement under which Modcomp will receive technical consulting services from CDC over e two-year period. Under the software arrangement, Modcomp will receive rights to e variety of CDC software for a percentage of the licensing fees received.

The stock arrangement gives CDC less than a 2% interest in Modcomp; the deal is valued in excess of $600,000.

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New Companies

Sydis, Inc. was formed by former employees of Rolm Corp, Hewlett-Packard Co. and Micon Industries, inc. to design, manufacture and market e local network of management and professional workstations with communications and processing capabilities. The company is headquartered et 685 Benvenue, Los Altos, Calif. 94022.

Five former employees of American Can Co. have established **Intelligent Industrial Systems, Inc.** The company will provide high-technology services, products and consulting to industrial markets in the areas of manufacturing eutomation, process and machine control, material handling and intelligent instrumentation. Its headquarters are located et 1 Harmon Plaza, Secaucus, N.J. 07094.

The Koffler Group has organized e consulting service specializing in office eutomation and telecommunications. It is headquartered at 1301 Lachman Lane, Pacific Palisades, Calif. 90272.

Data-Type Ltd. of South Wales has announced the formation of a North American subsidiary, **Data-Type, Inc.**, to market and support the Autograph line of computer graphics terminal products. The subsidiary is et 2615 Miller Ave., Mountain View, Calif. 94041.

Graphic Software Systems, Inc. is the creation of five former Tektronix, Inc. graphics professionals. The new company will produce graph'cs software for microcomputers. It can be reached through P.O. Box 673, 29783 Town Center Loop, Wilsonville, Ore. 97070.

Array is a technical training company offering courses on structural enalysis and design, SAS, Focus, Simplan and others. Array is based et 2005 Center Ave., Northbrook, Ill. 60062.

Sysdes, Inc., a computer firm specializing in consulting, systems and software services, has been established at 1900 N. Beauregard St., Alexandria, Va. 22311.

Supershorts

Honeywell, Inc. plans to open 20 field-support centers nationwide to provide new and existing users of its office automation systems products with training and demonstrations. The first of the office automation centers opened recently in Boston.

— — —

At its annual meeting in Denver, the stockholders of Information Solutions, Inc. epproved a plan of reorganization and the formation of e holding company named Information Plus, Inc.

— — —

Northern Telecom, Inc. announced that its Electronic Office Systems unit has established e domestic distributor group to complement its direct sales force in the U.S. The new group is based in the Data Park, P.O. Box 1222, Minneapolis, Minn. 55440.

— — —

SEI Financial Services Co. has filed documents with the Securities and Exchange Commission and other agencies to become a broker/dealer.

— — —

Plexus Computers, Inc. has adopted Western Electric's new Unix System III operating systems as the standard for its existing and planned product lines.

— — —

Shugart Associates, Inc. plans to manufacture its floppy disk drives at a new 250,000 sq-ft facility in Lille, France, this year.

— — —

Scitec Corp. has established U.S. headquarters et 126 Thames St., Newport, R.I. It selis and services communications processors, including the CPX and CPX 25 series.

— — —

Atlantic Management Systems, Inc. has opened an office in the UK to expand support to its European client base. The new offices are et 72 Prince St., Bristol, England BS1 4HU.

Foreign Orders

CGA Computer Associates, inc. has received its largest software contract, valued at $417,000, from Rheinisch Westfaelisches Elektrizitaetswerk, a West German utility company.

System Sciences Corp., a wholly owned subsidiary of Computer Sciences Corp., has received e $6-million contract to develop an automated logistics system for the Egyptian Air Force. The three-year contract was awarded by the U.S. Air Force under the foreign military sales program.

Modular Computer Systems, Inc. announced that Systems Technology Forum has purchased e $152,000 Modcomp computer system for installation in its central London office.

Tea Domestic Airline Co. has inaugurated new message-switching and Notice to Air Men systems using a Sperry Univac 1100/62 computer supplied by Nippon Univac Kaisha Ltd., the Sperry Corp. computer marketing venture in Japan.

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SR. SYSTEMS PROGRAMMER.....to $40K
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PROJECT LEADER.....to $35K
HP-3000. Develop financial applications.

SR. PROGRAMMER.....to $30K
IBM Compatible Mainframe. OS, CICS. Support manufacturing and materials systems.

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THE OPPORTUNITY.

With a 66% increase in revenues and an 89% increase in profits this fiscal year, **Cullinane Database Systems, Inc.** is the most respected and financially successful company in the computer software industry. A user driven company whose products have been rated #1 by an enthusiastic user base, **Cullinane** has the following opportunities available.

SYSTEMS SOFTWARE DEVELOPMENT

Requires creative highly motivated professionals with extensive background in systems programming or control systems software development. Results-oriented customer responsive environment. Development openings are within the following groups:

- **Database • Data Communications**
- **Integrated Data Dictionary**
- **On-Line Query • Audit-Retrieval**
- **Application Development System**

ON-LINE PRODUCTS/ TECHNICAL SUPPORT

Provide technical support to customers via telephone. Requires proven ability and desire to interact effectively with customers. One or more of the following desirable: 3-5 years' experience in systems programming background in database systems such as IDMS or IMS; experience with on-line systems such as IDMS/DC or CICS; extensive Assembler required; experience installing and maintaining BTAM, VTAM or TCAM desirable.

GENERAL LEDGER SYSTEM/ TECHNICAL SUPPORT

Will provide technical support via telephone to users of general ledger system. Requires proven ability and desire to interact effectively with customers. Extensive background in accounting, ability to communicate within accounting industry, and minimum 3 years' data processing experience required. Familiarity with **Cullinane** products, general ledger applications and knowledge of COBOL highly desirable.

APPLICATIONS SOFTWARE DEVELOPMENT

Requires senior level (minimum 3-5 years) experience in design, development and implementation of financial (general ledger, A/P, A/R, etc.) or manufacturing applications. Database background essential. Project leadership experience desirable. Good communication skills and ability to work independently.

TECHNICAL FIELD SUPPORT

Northeast Region

To install products, provide training, and phone or on-site support to current and prospective customers. Requires experience within an IBM mainframe environment and background in programming, DB/DC administration, or systems.

COURSE DEVELOPER

Will design instructional programs and materials for our software products. Requires experience in designing training programs for industry/business. Ability to research, organize, and communicate technical information. Demonstrated knowledge of programming, computer operations or applications.

SOFTWARE TECHNICAL WRITERS

Requires solid grasp of basic data processing concepts. Work closely with development staff overseeing each document from design through printing. Assignments will be in the areas of audit/retrieval, database, data communications, financial, manufacturing, and banking applications. Familiarity with IBM operating systems a plus. Access to on-line text entry and editing facilities available to each writer. Include writing sample with resume.

PRODUCT MARKETING

Requires extensive experience in sales/marketing of manufacturing software systems and thorough knowledge of manufacturing environment. Will develop and implement marketing programs and provide pre/post sales support. Responsible for product presentations to prospects, sales organization and internal staff. Excellent communications and presentation skills essential.

For the preceding positions, qualified candidates should send resume to Susan Lasovick, Personnel Administrator, **Cullinane Database Systems, Inc.**, 400 Blue Hill Drive, Westwood, MA 02090.

PRODUCT MANAGEMENT

Requires expertise in one of the following: database systems, teleprocessing monitors, on-line application development systems, or manufacturing systems. Will interact with development, documentation, education, and field groups to coordinate planning and implementation of new products and releases. Will also provide technical marketing support. Strong communications and presentation skills required.

MANUFACTURING SALES REPRESENTATIVES

As we expand our market base, we need professionals with a proven track record in manufacturing software sales. These positions require expertise in all facets of manufacturing systems including MRP, BOM, Inventory Control, Order Entry and Purchasing. Familiarity with database, data communications concepts and exposure to IBM mainframe environment is desirable; strong DP or technical background is preferred. APICS affiliation is highly desirable. Excellent communication skills required to interact with internal groups, Field Organization and prospective users. Positions available nationwide.

MANUFACTURING FIELD SUPPORT

Qualified candidates will have 3-5 years programming experience in an on-line environment; strong manufacturing applications experience and IDMS or other database background is required.

AUDIT/RETRIEVAL SALES REPRESENTATIVES

Due to our continued growth, we are seeking individuals with strong EDP auditing background to join our marketing staff. Responsibilities include ongoing development of a defined territory, producing new accounts and managing existing clients. Sales experience is a plus, but not necessary. Opportunities are available in major cities nationwide.

For the preceding positions, qualified candidates should send resume to Roy Evarts, Employment Manager, **Cullinane Database Systems, Inc.**, 400 Blue Hill Drive, Westwood, MA 02090.

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Cullinane Database Systems

Software Professionals

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NCR Systems Engineering offers the ideal environment for the design and development of interactive software systems. Our modern, hassle-free facility was designed expressly for the professional systems developer who thrives on creative research, design and development challenges in EDP systems. Our systems developers enjoy total project visibility including customer interface. Current expansion-created opportunities include.

Software Tools Developer — You will design, implement and maintain systems software associated with program development environment. This includes but is not limited to library systems, linders, source formatters, documentation formatters and general software tools. Requires BSCS plus 1-5 years program development systems, PASCAL language experience and linker experience.

Operating Systems Analyst —You will be involved in the design and development of interactive software systems emphasizing communications and distributed processing. Areas include systems command language, process management and communications drivers, using PASCAL-based, high level language.

Systems Program Analyst — You will provide tactical planning of product releases, coordinate and negotiate product release contents and propose and enhance product strategies. This position requires a BSCS degree or business degree, 3 years software related experience, and product/project management experience.

Firmware Systems Developers — You will design and implement firmware for next generation distributed/processing systems. This includes work in micro programming, virtual machine emulation, I/O processor, system console firmware and VLSI-based systems. BSCS degree plus 1-3 years firmware design experience, assembly language programming and PASCAL required.

Quality Assurance Systems Analyst — You will use software and systems evaluation techniques to conduct product specification and quality assurance for interactive business systems. Your accountabilities include product reviews, test definition and development, and systems analysis. BSCS plus 2 years experience in systems analysis and/or applications programming are required.

Performance Measurement Analyst — You will measure and analyze the performance of a major software system as well as design of software performance monitor and synthetic benchmarks.

In addition to offering a comprehensive benefits package, NCR places great emphasis on your educational development with both in-house and off-site training. You will further benefit from use of our newly developed technical library. And there is no better place for year-round enjoyment of the Southern California climate and recreational facilities than the San Diego area. You may also be surprised to learn of the wide range of housing options. If the combination of an ideal professional and personal environment appeals to you, apply immediately for the position of your choice. Send your resume or call.

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Complete Computer Systems

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Systems Engineering
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9888 Old Grove Road
San Diego, CA 92131
(714) 268-6304
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Have you heard about Crowley?

We are the world's largest privately-owned international marine transportation company. We have just recently completed a long-range, corporate-wide informations systems plan, using IBM's Business Systems Planning methodology, to develop and implement 29 new on-line integrated data base business systems. As a result, we are expanding our systems development staff in the areas of transportation, financial and human resources applications, and we are seeking to hire qualified DP professionals.

Our centralized computing environment consists of IBM's 4341 series and we are currently converting to MVS/SP. Our on-line software includes CICS, CMS, ROSCOE, and IDMS; the telecommunications environment is ACF/VTAM II and SNA. All development is guided by Crowley's commitment to state-of-the-art hardware/software and use of structured analysis, design and programming techniques.

Positions available include:

APPLICATION SYSTEMS MANAGERS

Manage all systems analysis and programming activities for company-wide transportation systems. Must have 6-10 years' experience in systems analysis, design, implementation, project management, and strong user skills. Transportation experience and structured methodology desired.

SR. TECHNICAL CONSULTANTS

Provide technical applications direction to develop and support systems in our various applications areas. Coordinate among applications, systems programmers and DBA. Proven track record in technical aspects of complex business systems required.

SR. PROGRAMMER/ANALYSTS

Perform applications analysis and programming. Must have 3+ years' experience in a large-scale IBM OS environment, COBOL, VSI or MVS. Data base experience, CICS, and structured techniques desired.

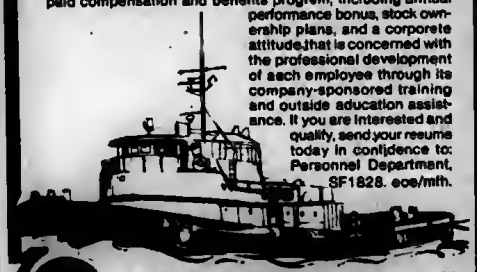
SR. CONSULTING ANALYSTS

Analyze business functions and support applications development projects. Extensive experience in business systems analysis is required.

SYSTEMS PROGRAMMERS

Design, install and maintain operating system software and utility software. Provide technical support to user DP staff. At least 2 years' IBM OS systems programming experience required. Knowledge of MVS, VM, CMS, SNA, NCP, and DASD desirable.

Crowley Maritime prides itself on a uniquely generous company-paid compensation and benefits program, including annual performance bonus, stock ownership plans, and a corporate attitude that is concerned with the professional development of each employee through its company-sponsored training and outside education assistance. If you are interested and qualify, send your resume today in confidence to: Personnel Department, SF1828. eoe/mfh.



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Experienced engineers are needed to plan, design and implement complex computer/manufacturing systems. A particularly appropriate background would be experience with CAD/CAM, Robotics, Computerized Process Control or Integration of Complete Systems. Requires a BSME, BSEE degree or other appropriate discipline.

Inexperienced engineers with some computer-orientation are also desired for entry level assignments. These positions offer a unique opportunity to gain basic experience with sophisticated applications of computer control. Requires a BSME, BSEE degree or other appropriate discipline.

WHO ARE WE? We are a major international manufacturer, a leader in our industry (not automotive), and known for significant contributions to metalworking. Our computer facilities are among the largest and most sophisticated anywhere, and are widely utilized to control manufacturing operations.

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We are seeking individuals with direct experience in the areas of:

- Mission Software Executive, Bus Control, Avionics Test and Software Support
- Mission Application Software
- Controls/Display
- Configuration Management, Documentation, Mission Software Development Support

Requires degree in EE, CS or Applied Mathematics and broad experience in design and development of real-time software. Knowledge of real-time software; Jovial (J73); FORTRAN; Assembly; 1553 Multiplex Bus; MIL STD. 1750 background is desirable.

BUSINESS SYSTEMS PROGRAMMERS

Our centralized data processing department supports all corporate information systems activities. Development projects are long-term; equipment, including the recently installed IBM 3081, multiple 3033's and 4341's, is state-of-the-art.

We are seeking individuals with experience in the following areas (OS/MVS, IMS and TSO experience is desirable):

- MVS Systems Programming
- Scientific Applications Programming
- Numerical Controls Systems Support
- Data Base Analysts
- Business Applications Programming
- Computer Operations

SIMULATION SOFTWARE ENGINEERS/PROGRAMMERS

We are looking for experienced professionals in the development of real-time simulation to test and evaluate avionic systems using VAX 11/780 and graphics equipment in our Advanced Technology Integration Laboratory.

Requires knowledge of FORTRAN, VAX/VMS, 5 years real-time programming experience, and BSEE or equivalent.

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We are seeking experienced professionals with BSAE or BSEE.

- Flight Control Analysis – Define stabilization and control law concepts.
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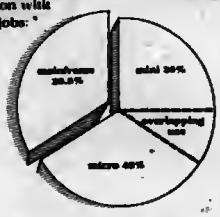

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Senior Systems Programmer

Minimum 3 years experience in Systems Support Activities to assume responsibilities for major component of MVS/3033/3031 environment. Experience required in JES2 and MVS installation and support. Assembly programming a plus. MVS/SP installation will be first assignment.

Systems Programmer

Expertise and experience in one or more of the following areas are required for this position: product installations, use of SMP or MVS debugging.

These positions offer an excellent compensation package. For immediate consideration, call Juanita Copeland, Supervisor of Staffing at (602) 248-5350 and please send resume including salary history to:HUMAN RESOURCES DEPARTMENT, Greyhound Tower 4005, Phoenix, Arizona 85077

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- **SYSTEMS PROGRAMMERS—DEC PDP-10**
  Operating systems design and support in a networking environment. Requires 5 plus years experience in TOPS-10 monitor internals.
- **SYSTEMS PROGRAMMER—DEC PDP-11**
  Design and implementation of networking software. Requires knowledge of MACRO-11 and 3 plus years experience in communications programming, preferably X.25 or BI-SYNC.
- **SYSTEMS ENGINEER—DEC PDP-10**
  Requires 3 plus years experience in maintenance of KI-10 or KL-10 systems hardware.

We offer competitive compensation and excellent benefits. If a technically challenging position interests you, and you are ready to contribute to the growth of the industry leader, send your resume in confidence to:

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National Data Corporation
60 Brooks Drive
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(617) 848-2660

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Expansion of M.I.S department to IVM 4341/MVS with local and remote System 34's has created openings at our Orlando International Headquarters for:

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Evaluation and implementation of telecommunication network using ACF/VTAM,and ACF/NCP supporting remote location including S/34's.

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SYSTEMS PROGRAMMER- Requirements are solid "hands-on" knowledge of VM/CMS in a large IBM system environment.

PROGRAMMER/ANALYST- B.S. Degree and 2+ years financial applications development experience in COBOL. The environment includes IBM 3033, MVS, TSO, IMS.

PROGRAMMER/ANALYST- Experienced in IBM ASSEMBLER and banking systems development.

DATABASE ANALYST- Background should include solid knowledge of DB2 plus experience in implementation of a large scale database.

TELEPROCESSING MANAGER- Experienced in data communications management. Network includes TANDEM front-end, CICS, TABMASTER in a IBM OS/MVS systems environment.

PROJECT LEADER- 5+ years FINANCIAL SYSTEMS DEVELOPMENT experience plus knowledge of VSE COBOL in NCR systems environment.

For immediate, professional consideration of your qualifications for these and other career opportunities, call, write or send resume to

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Vice President, MIS/DP Operations
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Leading Florida manufacturer is seeking a professional, growth oriented individual to work on a small team developing manufacturing and financial systems. Applicant should have 4 to 8 years of hands-on experience in designing, coding and implementing applications software. The following additional qualifications are required:

- Proficiency in RPG III and CL
- IBM System/38 experience
- Experience in manufacturing and financial systems
- Design and implementation experience
- MAPICS experience a big plus

We offer a stable and congenial atmosphere,excellent location,competitive salary,excellent benefit package and state-of-the-art technology.

Submit resume including salary history to:

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This position will be responsible for optimal transition of systems specifications into application code, design, coding and testing of computer programs for interactive and batch applications.

The ideal candidate should have a Bachelor's Degree in Business, Accounting, Computer Science, Math or equivalent in experience/training or three years experience, two of which should have been in programming using COBOL.

We offer a competitive package that includes medical, dental, life insurance, car insurance and full education reimbursement. If you would be interested in joining the ever 900 people who call Current, Inc. their home, forward resume, salary history and requirements to:

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With compensation rising rapidly and sweeping technological changes occurring practically overnight in the computer profession, you can quickly become out-of-touch with salary and career trends. Are you—and is your salary—keeping up?

If you haven't kept in touch with computer salaries in the past six months or so, you might be surprised at the changes.

In our recent Survey, which polled more than 50,000 computer professionals, new statistics about compensation differences emerged. Here is a sampling:

- While some computer professionals have increased their salaries dramatically during the past twelve months, others, performing the same type of work and having the same general level of experience, have barely managed to keep pace.
- While length of experience in computing bears a direct relationship to compensation, type of experience is often a more critical factor.
- Some emerging technologies—microcomputer systems, for example—are having an unusual impact on compensation in the field.

Salaries for 48 positions are compared.

1982 salary data for 48 different position categories—at various levels of experience and computer installation sizes—are reviewed in the report. Included are positions in programming, software, systems design, data communications, mini/micro systems, data base, EDP auditing, computer marketing and more.

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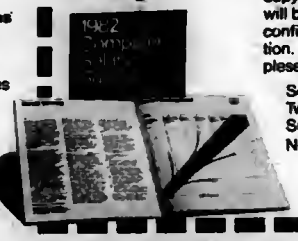

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IBM OS/MVS/CICS/IMS

Data Base Analyst..... To $40K
IMS DB/DC - Data Dictionary

Send resumes to Jim Fleming

ROBERT HALF
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RPG II Senior Programmers

Midwest Software Company is in need of Senior Programmer/Analysts proficient in designing and programming systems for IBM 34/32 equipment. System 38 experience is a plus. Minimun four years experience,excellent pay and benefits for the right people. We want people that can grow with our company.

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CAPITAL SYSTEMS INC.
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Data Processing
SUNBELT OPPORTUNITIES

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SYSTEMS ANALYSTS
PROGRAMMER ANALYSTS
PROJECT LEADERS
SYSTEMS PROGRAMMERS

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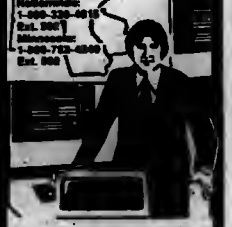

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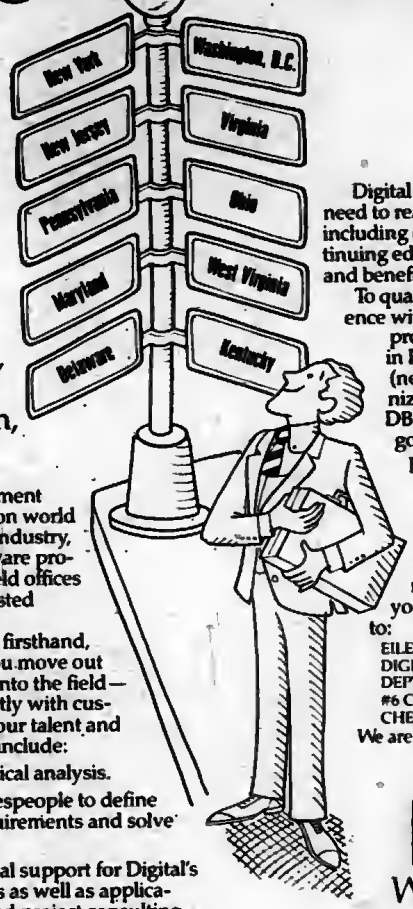

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Rank and salary: Competitive. Based on experience and qualifications.

Duties: Expected to assist in developing a bachelor's program in information science and teach undergraduate courses in a mathematical sciences department.

Minimum requirements: Master's degree in computer science.

Availability: Sept. 1982.

Deadline: Applications must be received by April 1, 1982.

Send vita, transcripts and three references to:

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Chair Search Committee
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ASSISTANT DIRECTORS OF ACADEMIC COMPUTING VIRGINIA COMMONWEALTH UNIVERSITY TWO FACULTY POSITIONS

Applications and nominations are invited for Assistant Directors of Academic Computing for the Academic Campus of Virginia Commonwealth University and for the Health Science Campus (the Medical College of Virginia). The two campuses of VCU both are located in Richmond, Virginia. The Academic Campus enrolls over 17,000 students in six schools (Arts, Business, Community & Public Affairs, Education, Humanities & Sciences and Social Work), and the Health Sciences Campus enrolls over 2,700 students in six schools offering programs of study in the health sciences (Allied Health Profession, Basic Sciences, Dentistry, Medicine, Nursing and Pharmacy). VCU ranks as a comprehensive doctoral granting institution, one of three in the state of Virginia.

The Assistant Director for the Academic Campus Division has responsibility for a staff of eleven full-time and approximately 25 part-time employees providing computing facilities to a large volume of faculty and students (undergraduate and graduate users). A large part of this responsibility is in maintaining and enhancing contacts with the academic faculty so as to support their plans for instructional and research activities.

The Assistant Director for the Health Science Division supervises a staff of eleven full-time persons providing computer support for biomedical research, and instruction in health sciences. An essential part of the responsibilities includes supporting faculty involved in biomedical research.

Computing hardware available to serve the university includes two IBM 370/168 CPU s, loosely coupled, an HP-3000 series III, and a SIGMA-VI. Participation in studies concerning upgrades for these systems, and development of recommendations to the Director of Academic Computing for management of a budget of well over one million dollars are also important responsibilities.

Applicant's qualifications should include an earned graduate degree (doctorate preferred), appropriate technical background in computing (hardware, software and data communications), experience in computer applications in academic disciplines, including research and management skills. Communication skills are essential.

Salary and rank will be commensurate with qualifications and experience. Applications and nominations will be accepted until April 1, 1982 and should be sent to:

Dr. Donald L. Hartford
Director of Academic Computing
1015 Floyd Avenue
Richmond, Virginia 23284

Applications should include a curriculum vita and the names of at least three persons to whom the search committee can turn at the appropriate time for the assessments of the candidate's strengths and experience. Confidentiality requirements of candidates will be strictly observed.

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Nixdorf Computer Corporation
168 Middlesex Turnpike — B-1
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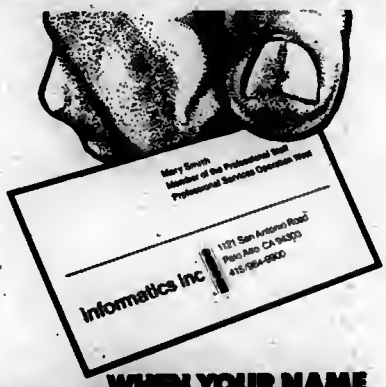

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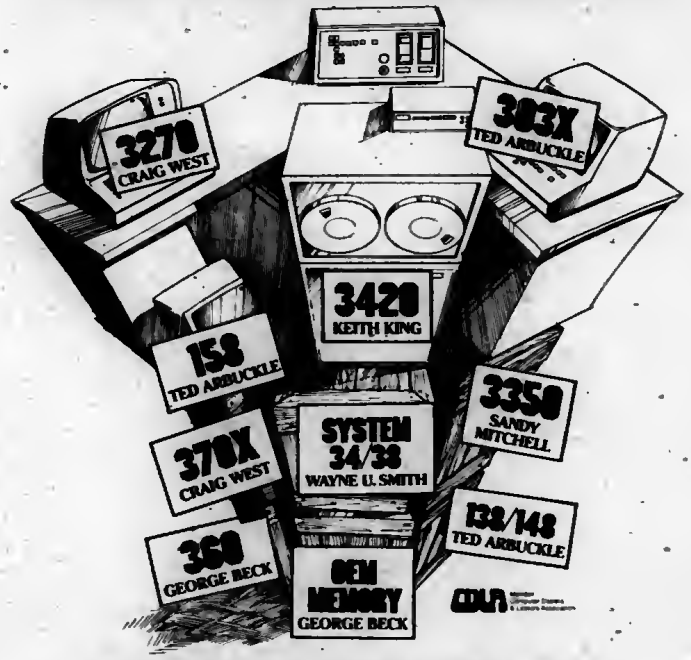

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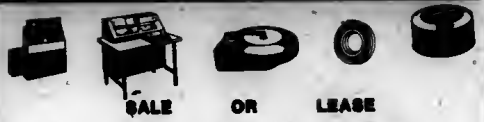

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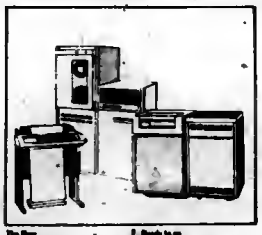

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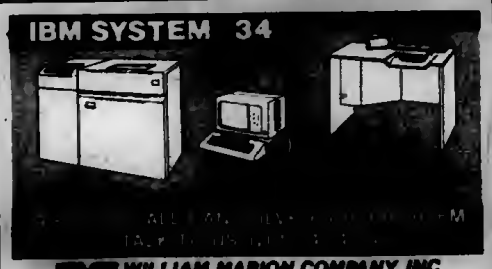

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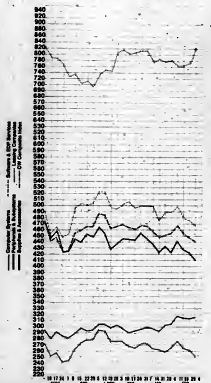

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Computerworld Stock Trading Summary

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CLOSING PRICES WEDNESDAY, FEBRUARY 24, 1982

EXCH		1981-82 RANGE (1)	CLOSE FEB 24 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	23- 48	26 7/8	- 3/8	-1.2
N	BURROUGHS CORP	28- 72	38 1/8	+2	+5.8
O	COMPUTER AUTOMATION	8- 28	11 3/4	- 3/4	-6.0
N	CONTROL DATA CORP	18- 42	35 1/8	+1 5/8	+4.8
N	CRAY RESEARCH INC	29- 48	32 3/8	- 1/4	-0.7
N	DATA GENERAL CORP	42- 87	46	-4 3/4	-9.2
N	DATAPOINT CORP	27- 68	26	-8 3/8	-18.5
N	DIGITAL EQUIPMENT	80-113	85	-2 1/2	-2.8
A	FEED INC	7- 18	8 3/4	- 5/8	-6.4
N	ELECTRONIC ASSOC.	8- 13	8	- 1/8	-1.5
N	FOUR-PHASE SYSTEMS	18- 48	38 1/4	- 1/4	-0.6
N	FOXBORO	42- 62	47 3/4	- 1/2	-1.0
O	FULCRUM COMP GRP	1- 2	3/8	0	0.0
O	GENERAL AUTOMATION	4- 18	4 3/8	-1 1/4	-22.2
N	HARRIS CORP	31- 60	33	-1 1/8	-3.2
N	HEWLETT-PACKARD CO	37- 24	43 1/8	+1 1/2	+3.6
N	HONEYWELL INC	63-118	75	+1 3/8	+1.8
N	IBM	49- 73	62	- 1/4	-0.4
O	MAGNUSON COMP SYSTS	3- 32	2 3/4	- 1/8	-2.2
N	MANAGEMENT ASSIST	9- 26	10 5/8	+ 5/8	+6.2
O	MINI-COMPUTER SYST	0- 4	1/2	- 1/8	-20.0
N	MODULAR COMPUTER SYS	7- 32	7 1/4	+ 1/8	+1.7
N	MOHAWK DATA SCI	11- 32	11 1/2	- 3/8	-2.1
N	NCR	39- 78	46 1/4	+1 1/4	+2.7
N	PRIME COMPUTER INC	18- 48	22 7/8	+ 1/8	+0.6
N	PERKIN-ELMER	20- 36	20 5/8	- 7/8	-4.0
N	SPERRY CORP	28- 65	28	-1 1/8	-3.7
O	TANDEM COMPUTERS INC	13- 35	24 1/2	-1 1/4	-4.8
N	TEXAS INSTRUMENTS	71-151	80 7/8	+1 5/8	+2.0
A	WANG LABS.	23- 48	27	- 1/2	-1.8
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	18- 29	23	0	0.0
N	COMDISCO INC	18- 27	24 3/4	-1 1/4	-4.8
O	COMMERCE GROUP CORP	1- 2	1/2	0	0.4
O	COMPUTER INVSTRS GRP	1- 4	1/4	0	0.0
O	CONTINENTAL INFO SYS	4- 8	5 1/8	- 1/8	-2.3
N	DPF INC	8- 13	10 3/8	- 1/4	-2.2
O	ITEL	1- 5	1 1/4	+ 1/2	+66.6
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 30	23 5/8	- 3/8	-1.2

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH; B=BOSTON
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

EXCH		1981-82 RANGE (1)	CLOSE FEB 24 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	2- 6	2	- 1/4	-11.1
O	ADVANCED SYSTEMS INC	18- 18	13 1/2	0	0.0
O	ANACOMP INC	10- 18	11 5/8	+ 5/4	+6.8
O	ANALYSTS INTL CORP	3- 14	7	0	0.0
A	APPLIED DATA RES.	12- 25	20 1/2	- 1/8	-0.6
P	ASTRADYNE COMP IND	2- 2	2 3/4	0	0.0
N	AUTOMATIC DATA PROC	22- 32	25	+ 1/4	+1.0
O	CGA COMPUTER ASSOC	4- 25	5 1/2	+ 3/4	+15.7
O	COMPUTER HORIZONS	1- 8	2	0	0.0
O	COMPUTER NETWORK	4- 8	4 1/2	+ 3/8	+6.0
O	COMPUTER SCIENCES	12- 30	12 7/8	+ 3/8	+2.7
O	COMPUTER TASK GROUP	10- 23	8 3/4	- 1/2	-4.8
O	COMPUTER USAGE	2- 10	2 1/8	- 3/8	-10.7
O	COMSERV CORP	9- 16	12	+ 1/4	+1.8
O	COMSHARE	7- 21	7	0	0.0
O	CULLINANE DATABASE	15- 37	27	-2 3/4	-9.2
O	DATA DIMENSIONS INC	0- 4	3/8	0	0.0
O	DATATAB	1- 4	1 5/8	0	0.0
O	DSI CORP	4- 8	6 1/4	0	0.0
O	DYATRON CORP	3- 11	6 1/4	0	0.0
N	ELECTRONIC DATA SYST	18- 30	20 7/8	+ 7/8	+4.2
O	INFORMATICS INC	10- 23	12 1/2	- 3/4	-4.8
O	INSYTE CORP	1- 2	1 3/4	- 1/2	-22.2
O	IPR COMPUTER MARKET.	1- 4	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 6	4	0	0.0
A	LOGICON	23- 38	30 3/8	-1 1/4	-3.9
O	MGMT SCI AMER INC	17- 26	18 3/4	- 1/2	-2.6
O	MATHEMATICA INC	12- 26	26	+1	+4.0
O	MATHEMATICAL APP GRP	18- 26	17	-1 1/2	-8.1
O	NATIONAL DATA CORP	14- 26	17 1/4	- 3/8	-2.1
N	PLANNING RESEARCH	5- 13	6 7/8	+ 1/8	+1.8
O	PROGRAMMING & SYS	1- 2	1	- 1/8	-11.1
O	REYNOLDS & REYNOLDS	16- 26	17 3/4	-1	-5.3
O	SEI CORP	17- 38	23	- 5/4	-2.6
O	STSC INC	6- 28	6 1/2	- 1/4	-3.7
O	SCIENTIFIC COMPUTERS	7- 18	7	- 3/8	-5.0
O	SOFTWARE AG	9- 23	8 1/2	+ 1/8	+1.4
N	TYMSHARE INC	10- 28	16	-2	-11.1
A	URS CORP	11- 18	12	0	0.0
N	WYLY CORP	7- 20	8	+ 5/8	+8.4
	PERIPHERALS & SUBSYSTEMS				
N	AM INTERNATIONAL	2- 25	2 1/8	-1 3/8	-39.6
A	ANDERSON JACOBSON	10- 26	11	0	0.0
O	AUTO-TROL TECHNOLOGY	9- 62	10 1/4	-1 3/4	-14.5
O	BANCTEC INC	20- 35	31 3/4	+1 1/4	+4.0
O	BEEHIVE INT'L	6- 18	8 3/8	- 1/4	-2.7
O	BOLT, BERANEK & NEW	9- 25	14	- 1/2	-3.4
O	CAMBEX CORP	2- 8	2 1/2	+ 1/4	+11.1
N	CENTRONICS DATA CORP	7- 40	10	-1	-9.0
A	CETEC CORP	4- 8	4 5/8	+ 1/2	+12.1
O	COMPUTER DEVICES INC	4- 10	8 1/2	- 3/8	-5.4
O	COGNITRONICS	3- 11	2 7/8	0	0.0
O	COMPUTER COMMUN.	1- 8	2/4	- 1/8	-18.0

EXCH		1981-82 RANGE (1)	CLOSE FEB 24 1982	WEEK NET CHNGE	WEEK PCT CHNGE
A	COMPUTER CONSOLES	18- 28	18 3/8	+ 3/8	+1.8
O	COMPUTER TRANSCEIVER	3- 8	8	+ 5/8	+11.6
N	COMPUTERVISION CORP	20- 49	29 1/4	- 5/8	-2.4
N	CONRAC CORP	17- 26	23	+ 3/8	+1.6
A	DATA ACCESS SYSTEMS	2- 23	2	- 1/8	-4.0
A	DATAPRODUCTS CORP	49- 44	17 3/4	- 3/8	-2.0
O	DATUM INC	2- 8	1 5/8	0	0.0
O	DAVID JAMISON CARLYL	3- 7	6	- 1/2	-7.6
O	DECISION DATA COMPUT	3- 8	2	0	0.0
O	DELTA DATA SYSTEMS	2- 4	1 7/8	0	0.0
O	DATARAM CORP	4- 18	8 1/2	- 1/2	-8.2
N	ELECTRONIC M & M	3- 8	8 3/8	+ 1/8	+2.4
O	EVANS & SUTHERLAND	18- 40	23	-1 1/4	-5.1
O	FABRI-TEK	2- 8	2 7/8	0	0.0
O	GENERAL COMPUTER SYS	1- 12	2 1/2	0	0.0
N	GEN'L DATA COMM IND	8- 19	7 3/4	- 3/8	-4.8
O	GENERAL TERMINAL CP	1- 4	1/2	- 1/8	-20.0
N	HAZELTINE CORP	19- 35	27 5/8	- 1/2	-1.7
O	INFORMATION INTL INC	8- 17	11 3/4	-1	-7.8
O	INTEL CORP	21- 51	24 5/4	0	0.0
O	IPL SYSTEMS INC	5- 18	7	- 1/4	-3.4
A	LUNDY ELECTRONICS	7- 18	8 1/2	0	0.0
A	MSI DATA CORP	11- 27	18 1/4	- 1/2	-3.1
O	NETWORK SYSTEMS CORP	14- 29	17 3/8	0	0.0
O	OMEX	8- 8	2	0	0.0
N	PARADYNE CORP	26- 52	35	-1 1/2	-4.1
A	PENRIL CORP	8- 17	8 1/4	+ 1/8	+1.6
O	RAMTEK CORP	8- 23	14	- 7/8	-5.8
N	RECOGNITION EQUIP	4- 21	6 3/4	- 1/2	-11.7
O	SCAN DATA	1- 8	3/4	0	0.0
N	STORAGE TECHNOLOGY	18- 40	21 3/8	-1	-3.0
O	SYKES DATATRONICS	8- 34	23 1/4	-1 1/4	-5.1
A	3 BAR INC	12- 18	18 1/4	- 3/8	-2.2
A	TEC INC	4- 7	6 7/8	- 3/4	-11.3
N	TEKTRONIX INC	48- 70	48	0	0.0
N	TELEX	8- 8	8	0	0.0
O	TESDATA SYSTEMS CP	5- 17	6 1/2	- 1/4	-2.7
A	TIMEPLEX INC	7- 18	7 7/8	0	0.0
O	WILTEK INC	1- 3	1 3/4	- 1/8	-6.6
	SUPPLIES & ACCESSORIES				
B	AMERICAN BUS PRODS	11- 17	13 5/8	- 1/8	-1.0
O	BALTIMORE BUS FORMS	1- 2	1 1/4	0	0.0
N	BARRY WRIGHT	15- 24	17	- 1/4	-1.4
O	CYBERMATICS INC	1- 2	1 1/8	+	+5.8
A	DUPLEX PRODUCTS INC	12- 17	12	- 1/2	-3.7
N	ENNIS BUS. FORMS	18- 23	17 3/4	- 1/4	-1.0
N	3M COMPANY	48- 65	55 1/4	+ 5/8	+1.1
O	MOORE CORP LTD	27- 38	21 1/4	+ 7/8	+2.8
N	NASHUA CORP	18- 33	18	+1	+5.8
O	STANDARD REGISTER	30- 41	35 3/4	+2 1/2	+7.6
A	TAB PRODUCTS CO	18- 30	12 1/2	- 3/8	-2.8
N	WALLACE BUS FORMS	22- 38	31 1/8	- 1/8	-0.8

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Cambridge, MA *March 2*	Kansas City, MO *March 31*	Phoenix, AZ *March 18*
Charlotte, NC *March 30*	Los Angeles, CA *March 5*	Pittsburgh, PA *March 2*
Columbus, OH *April 12*	Louisville, KY *March 2*	Raleigh, NC *March 11*
Costa Mesa, CA *March 11*	Milwaukee, WI *April 14*	Roanoke, VA *March 16*
Dallas, TX *March 25*	Minneapolis, MN *April 13*	Salt Lake City, UT *March 23*
Dearborn, MI *March 25*	New Orleans, LA *March 4*	San Mateo, CA *March 25*
Denver, CO *March 16*	New York, NY *March 11*	Secaucus, NJ *March 9*
Des Moines, IA *April 6*	Oak Brook, IL *March 12*	St. Louis, MO *April 7*
Honolulu, HI *April 8*	Oak Brook, IL *April 8*	Washington, DC *March 16*
	Oklahoma City, OK *March 18*	

International Seminars

Adelaide, Australia *March 4*	Leeds, England *March 10*
Amsterdam, Netherlands *March 10*	Lyon, France *March 25*
Antwerp, Belgium *March 11*	Manila, Philippines *April 1*
Brussels, Belgium *March 16*	Montreal, Quebec, Canada *April 6*
Calgary, Alberta, Canada *May 12*	Ottawa, Ontario, Canada *March 9*
Dublin, Ireland *April 15*	Paris, France *March 24*
Geneva, Switzerland *March 30*	Perth, Australia *March 2*
Hong Kong *March 30*	Singapore *March 25*
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